ORDER NO. ARD82030129C2-19

Service Manual

Cassette Deck
RS-M258R
(Silver Face
Black Face)

Auto-Reverse Cassette Deck with
Auto-Tape Selector, Peak Hold 2 Color
FL Meters and Soft-Touch Controls

DOLBY SYSTEM

This is the Service Manual for the following areas.
[D] ········· For all European areas except United Kingdom.
[B] ········· For United Kingdom.

RS-M258R MECHANISM SERIES

Specifications

Track system: 4-track 2-channel auto reverse stereo recording and playback
Tape speed: 4.8 cm/s
Wow and flutter: 0.07 % (WRMS), ±0.15 % (DIN)
Frequency response: Metal tape; 20–18,000 Hz
30–17,000 Hz (DIN)
30–16,000 Hz ±3 dB
CrO$_2$ tape; 20–18,000 Hz
30–17,000 Hz (DIN)
30–16,000 Hz ±3 dB
Normal tape; 20–17,000 Hz
30–16,000 Hz (DIN)
30–15,000 Hz ±3 dB
Signal-to-noise ratio: Dolby* NR in; 67 dB (above 5 kHz)
Dolby NR out; 57 dB (signal level = max. recording level, CrO$_2$ type tape)
Fast forward and rewind time: Approx. 90 seconds with C-60 cassette tape

Inputs: MIC; sensitivity 0.25 mV, applicable microphone impedance 400 Ω – 10 kΩ
LINE; sensitivity 60 mV, input impedance 36 kΩ
Outputs: LINE; output level 700 mV, output impedance 2.6 kΩ
HEADPHONES; output level 125 mV, load impedance 8 Ω
Motor: FG servo DC motor
Heads: 4-head system;
2-SX (Sendust Extra) heads for record/playback
2-double-gap ferrite erase heads
Bias frequency: 85 kHz
Power requirements: AC; 110/125/220/240 V, 50-60 Hz
Preset power voltage; [D] ··· 220 V
[B] ··· 240 V
Power consumption: 20 W
Dimensions: 43.0 cm (W) × 10.9 cm (H) × 33.5 cm (D)
Weight: 5.8 kg

Specifications are subject to change without notice.
* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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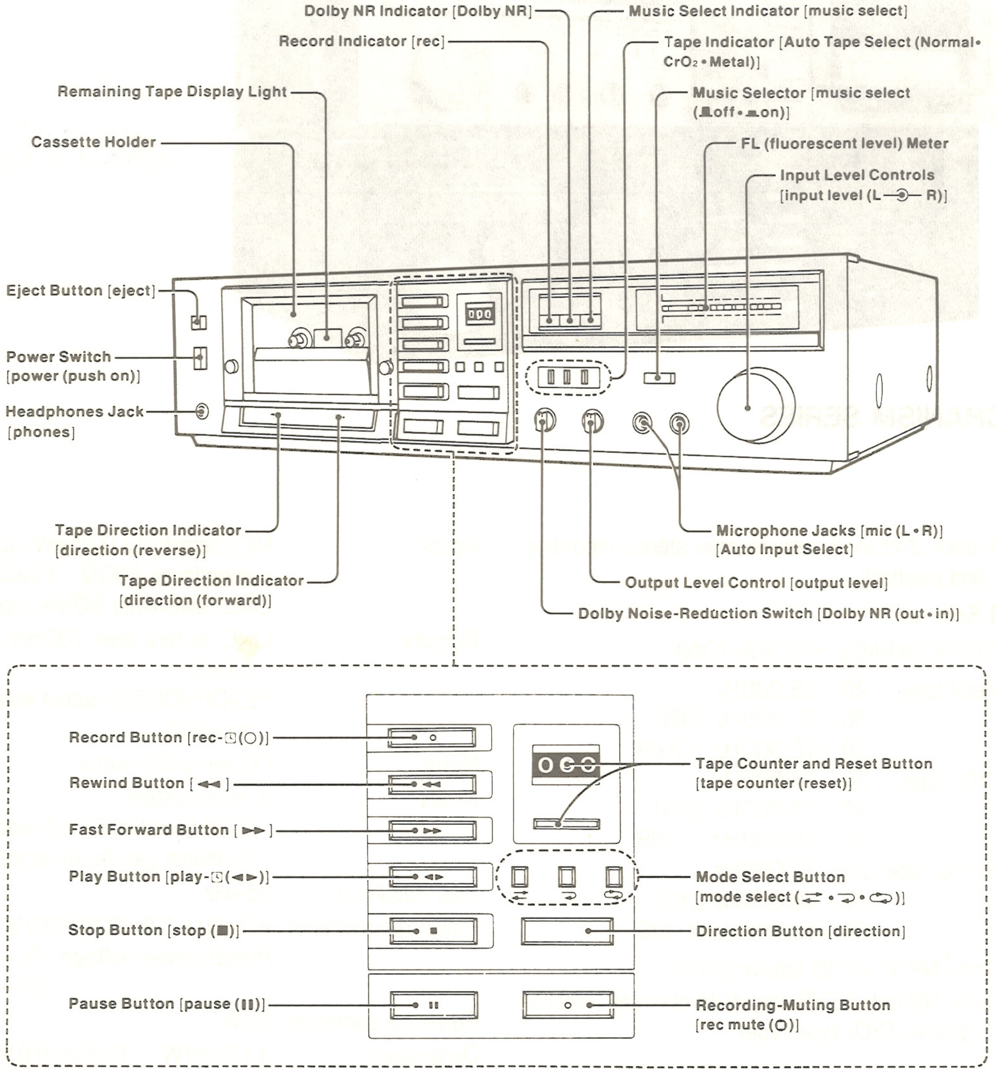
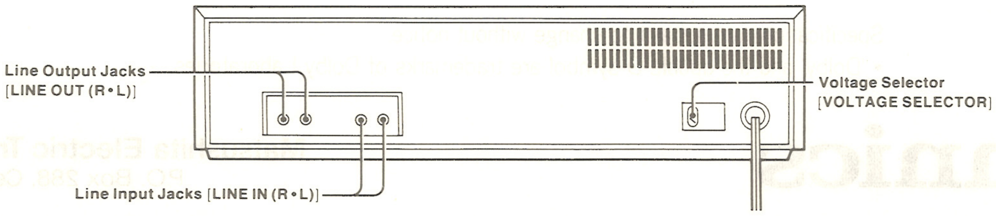
LOCATION OF CONTROLS AND COMPONENTS



Dolby NR Indicator [Dolby NR]
Music Select Indicator [music select]
Record Indicator [rec]
Tape Indicator [Auto Tape Select (Normal• CrO₂ • Metal)]
Remaining Tape Display Light
Music Selector [music select (▙off • ▃on)]
Cassette Holder
FL (fluorescent level) Meter
Input Level Controls [input level (L —◉— R)]
Eject Button [eject]
Power Switch [power (push on)]
Headphones Jack [phones]
Tape Direction Indicator [direction (reverse)]
Tape Direction Indicator [direction (forward)]
Microphone Jacks [mic (L • R)] [Auto Input Select]
Output Level Control [output level]
Dolby Noise-Reduction Switch [Dolby NR (out • in)]
Record Button [rec-◷(○)]
Rewind Button [◀◀]
Fast Forward Button [▶▶]
Play Button [play-◷(◀▶)]
Stop Button [stop (■)]
Pause Button [pause (❚❚)]
Tape Counter and Reset Button [tape counter (reset)]
Mode Select Button [mode select (⇄ • ↩ • ⟲)]
Direction Button [direction]
Recording-Muting Button [rec mute (○)]



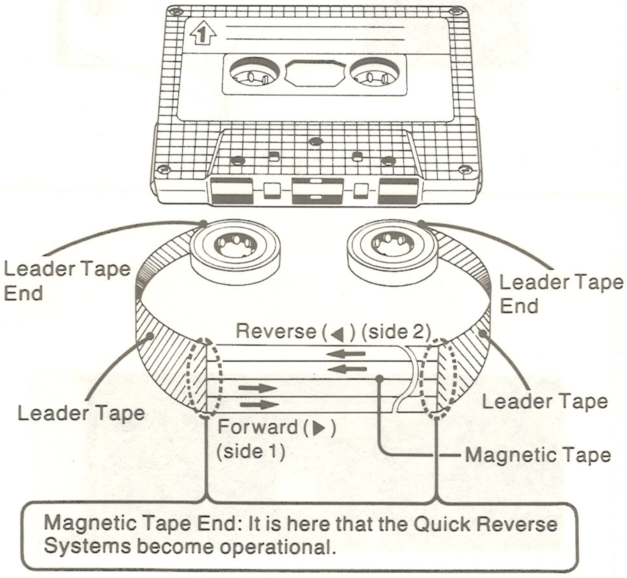
Line Output Jacks [LINE OUT (R • L)]
Line Input Jacks [LINE IN (R • L)]
Voltage Selector [VOLTAGE SELECTOR]

HOW THE AUTO REVERSE FUNCTION WORKS

This unit comes with an Auto Reverse Mechanism. It functions to automatically reverse the direction in which the tape is traveling and enables recording or playback on both sides of the tape without the tape having to be loaded and unloaded by switching over from side 1 to side 2 or from side 2 to side 1.

The Auto Reverse Function adopts a Quick Reverse System which uses a beam of light to detect the joins between the Magnetic Tape and the Leader Tape (in other words, the end of the magnetic tape) and reverses the direction in which the tape is traveling.

The direction in which the tape travels can be switched to forward or reverse using the Direction Button.
The tape direction mode can be switched using the Mode Select Buttons.


Leader Tape End
Leader Tape End
Reverse (◀) (side 2)
Leader Tape
Leader Tape
Forward (▶) (side 1)
Magnetic Tape
Magnetic Tape End: It is here that the Quick Reverse Systems become operational.

Operation Notes
(The Quick Reverse System will not function properly in the following cases.)

- The Quick Reverse System may not work at the Magnetic Tape Ends of some cassette tapes.
  These cassette tapes will be reversed automatically at the tape end.

- The Quick Reverse System may function erroneously in the following cases:

(1) When dust, dirt or other foreign matter has adhered to the tape surface.
(2) When the tape is wrinkled or creased. (Switch to the Non-Reverse Mode when the tape is repeatedly set to the forward and reverse directions and does not move as a result. Refer to "Operating The Mode Select Buttons.")
(3) When a strong light (direct sunlight or a spotlight) is directed onto the tape traveling inside the unit.
(4) When the unit sustains a strong shock.

- The Quick Reverse System does not function for about 15 seconds in the following cases:

(1) Immediately after the Play Button, Record Button or Direction Button has been operated.
(2) Immediately after the Quick Reverse System has functioned.

■ Operating The Direction Button

When the Direction Button is pressed, the direction of the traveling tape can be switched from forward to reverse or from reverse to forward.

The direction of the tape can be switched whether the tape has stopped or whether it is moving.
The tape direction is shown by the Tape Direction Indicator.
The tape direction is switched every time the Direction Button is depressed.

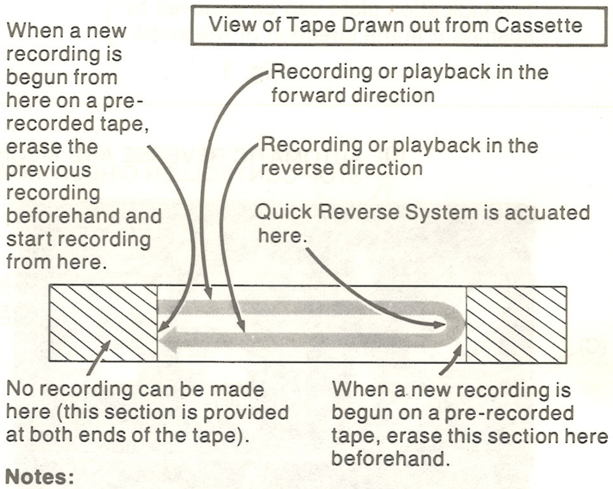
*When the tape direction is switched (from forward to reverse or vice versa), the muting circuit functions to prevent any recording, playback or erasure for a split second (about 0.3 sec.). (This also applies when the tape direction is switched by the Quick Reverse System.)

■ Operating The Mode Select Buttons

The Mode Select Buttons can be used to select any of 3 tape modes.

① **Non-Reverse Mode:** Press the [⇄] Button.
Recording or playback is possible in the forward or reverse direction only.
In this case, the Auto Stop Mechanism functions at the Leader Tape End and the tape stops automatically.

② **Auto Reverse Mode:** Press the [↩] Button.
When the tape on side 1 (or side 2) is traveling in the forward direction for recording or playback, the Quick Reverse System is actuated at the magnetic Tape End, and after side 2 (or side 1) has been recorded or played back, the tape automatically stops at the Magnetic Tape End.


View of Tape Drawn out from Cassette
When a new recording is begun from here on a pre-recorded tape, erase the previous recording beforehand and start recording from here.
Recording or playback in the forward direction
Recording or playback in the reverse direction
Quick Reverse System is actuated here.
No recording can be made here (this section is provided at both ends of the tape).
When a new recording is begun on a pre-recorded tape, erase this section here beforehand.

Notes:
(Bear the following points in mind when recording or playing back a tape in the auto-reverse mode.)

(1) Recording is not possible on the side of a cassette in which the Accidental-Erase Prevention Tab has been broken out.

(When recording from side 1 in the forward direction, it will not be possible to press in the Record Button if the Accidental-Erase Prevention Tab for side 1 has been broken out.
If the Accidental-Erase Prevention Tab for side 2 has been broken out, material will be recorded on side 1 only and then the tape will stop at the Magnetic Tape End.)

(2) When recording or playing back in the reverse direction, the Quick Reverse System will not change the direction over to forward even when the tape arrives at the Magnetic Tape End, and the tape stops.

(3) When recording new material in the auto-reverse mode on a pre-recorded tape, recording in the forward direction will stop and it will not be possible to erase about 28 mm at the part of the tape where the direction is switched from forward to reverse (see figure above). Therefore, make a point of erasing the previous recording at this part beforehand and then proceeding with the recording of the new material.

③ **Auto-Continuous Mode:** Press the [🔁] Button.

- **Playback**

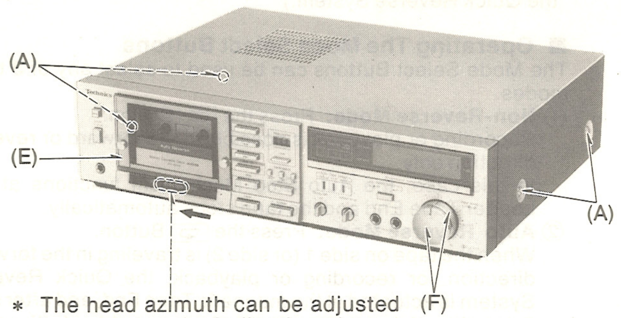
Whether the tape is traveling in the forward or reverse direction, playback will continue until the Stop Button is pressed.

- **Recording**

The same mode is established as the auto reverse mode.

*When two Mode Select Buttons are erroneously pressed simultaneously, the left-hand button mode is established.
When none of the three Mode Select Buttons have been set to their pressed position, the Auto-Continuous Mode is established.

DISASSEMBLY INSTRUCTIONS



* The head azimuth can be adjusted by removing the indication plate.

(The indication plate can be removed by pushing it in the direction of the arrow.)

Fig. 1

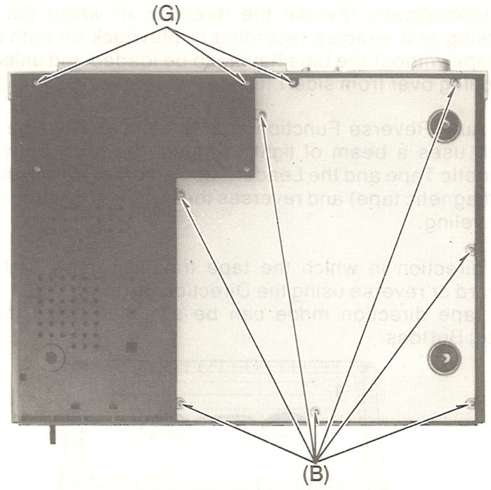


Fig. 2

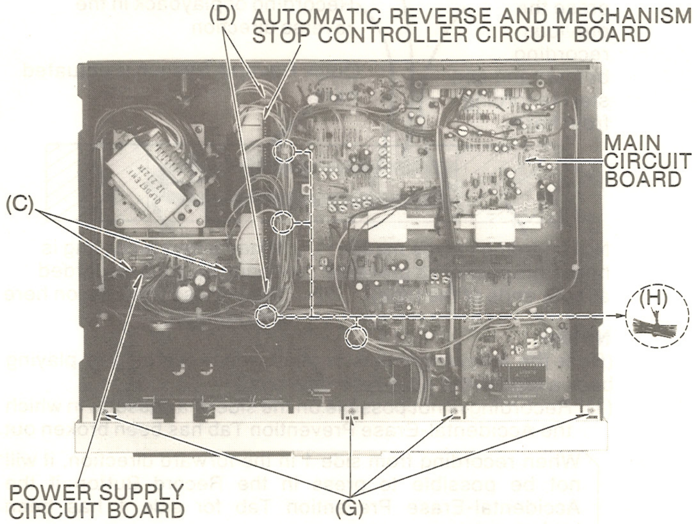

(D) AUTOMATIC REVERSE AND MECHANISM STOP CONTROLLER CIRCUIT BOARD
MAIN CIRCUIT BOARD
(C)
(H)
POWER SUPPLY CIRCUIT BOARD
(G)

Fig. 3

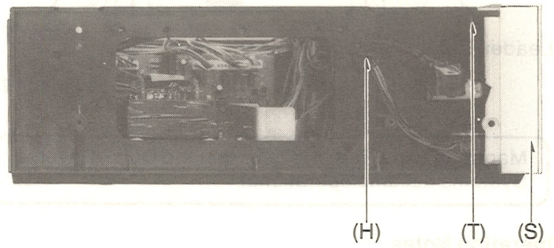


Fig. 4

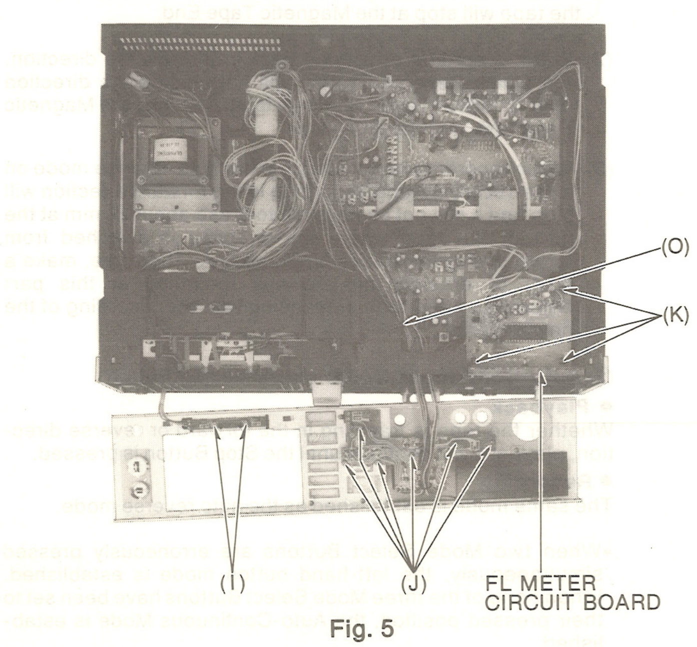

(O)
(K)
(I)
(J)
FL METER CIRCUIT BOARD

Fig. 5

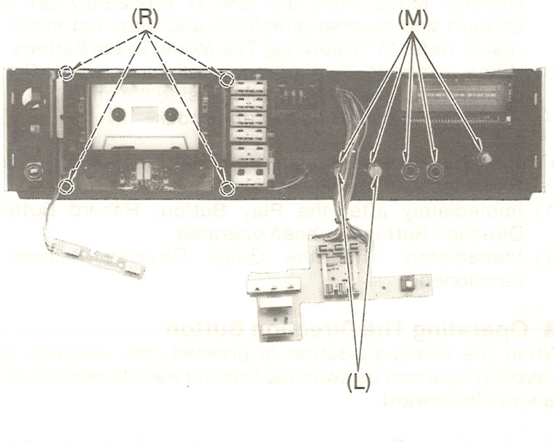


Fig. 6

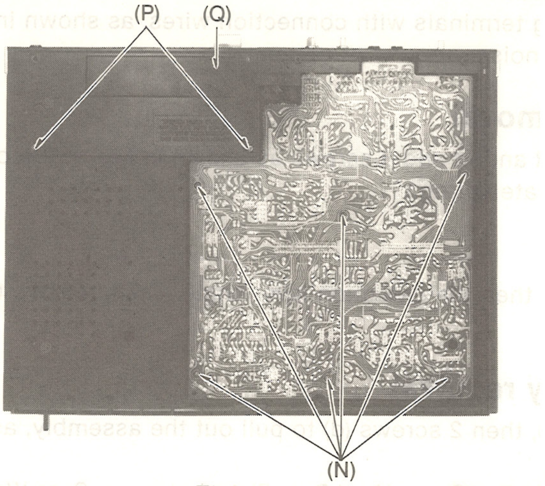


Fig. 7

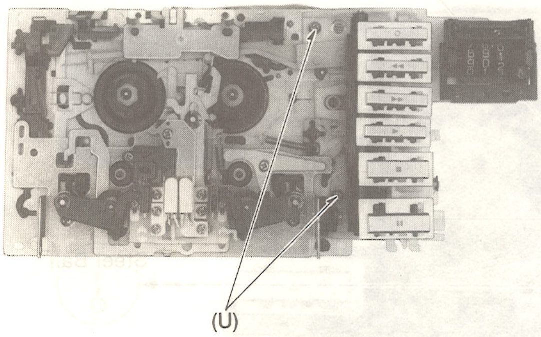


Fig. 8

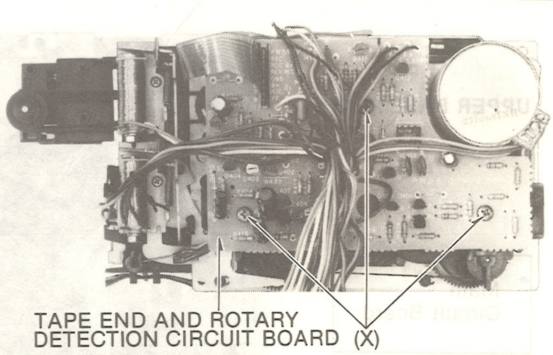


Fig. 9

Ref. No.	Procedure	To remove ——.	Remove ——.	Shown in fig. ——.
1	1	Case cover	• 4 screws ························ (A)	1
2	2	Bottom cover	• 7 screws ························ (B)	2
3	1→3	Power supply circuit board	• 2 red screws ···················· (C)	3
4	1→4	Auto-reverse and mechanism stop controller circuit board	• 2 red screws ···················· (D)	3
5	1→2→5	Front panel	• Cassette lid ····················· (E) • 2 level control knobs ············ (F) • 7 screws ························ (G) • 5 binders ······················· (H) • 2 screws ························ (I) • 6 red screws ···················· (J)	1 1 2, 3 3, 4 5 5
6	1→2→5→6	FL meter circuit board	• 3 red screws ···················· (K)	5
7	1→2→5→7	Main amp. circuit board	• 2 control knobs ················· (L) • 5 nuts ·························· (M) • 6 red screws ···················· (N)	6 6 7
8	1→2→5→8	Mechanism unit	• Binder ·························· (O) • 2 screws ························ (P) • Bottom plate ···················· (Q) • 4 red screws ···················· (R) • Side panel ······················ (S) • Eject lever ····················· (T)	5 7 7 6 4 4
9	1→2→5→8→9	Operation button assembly	• 2 screws ························ (U)	8
10	1→2→5→8→10	Tape end and rotary detection circuit board	• 3 red screws ···················· (X)	9

DISASSEMBLY NOTES

1. For measurement and adjustment with the mechanical unit removed from the set, connect the mechanical chassis and lug terminals with connection wires, as shown in Fig. 1. This is to prevent influence from mechanical noise.

2. Upper Base Plate removal

Remove the pinch rollers (R and L) and 3 screws as shown in Fig. 1. (Be careful not to lose the steel ball under the head base plate spring.)

3. Motor removal

First, remove the screw (a), then the detection lever angle. Then, remove the screw (b), as shown in Fig. 1 and 2.

4. Reel frame assembly removal

Remove 2 snap washers (c), then 2 screws (d) to pull out the assembly, as shown in Figs. 1 and 2.

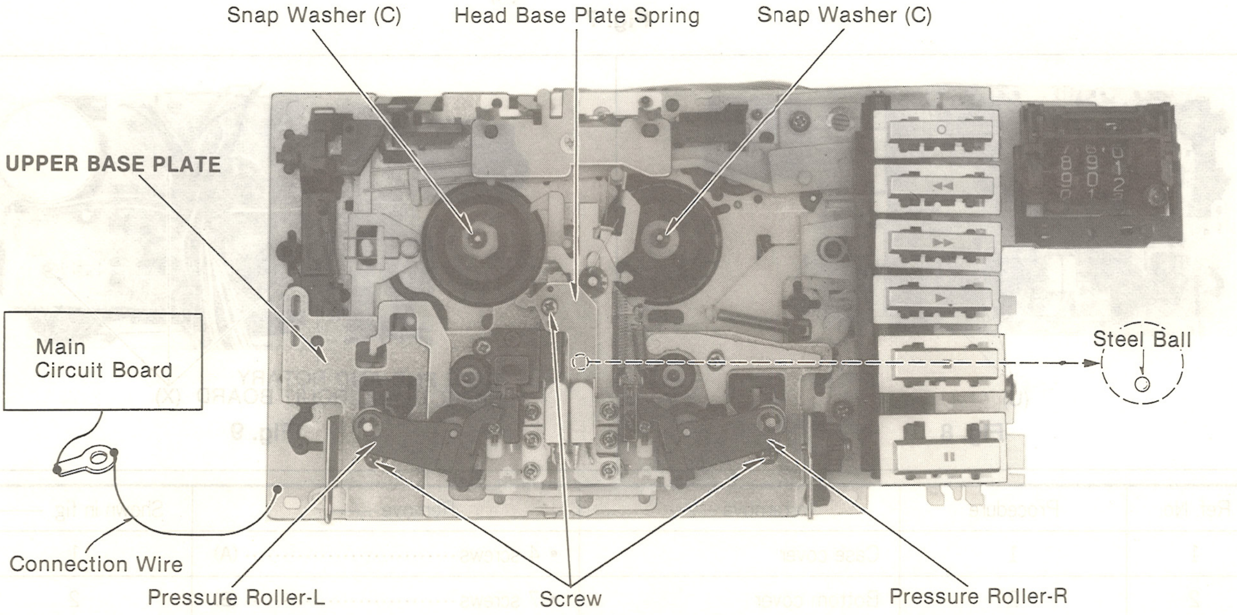

Snap Washer (C)
Head Base Plate Spring
Snap Washer (C)
UPPER BASE PLATE
Main Circuit Board
Steel Ball
Connection Wire
Pressure Roller-L
Screw
Pressure Roller-R

Fig. 1

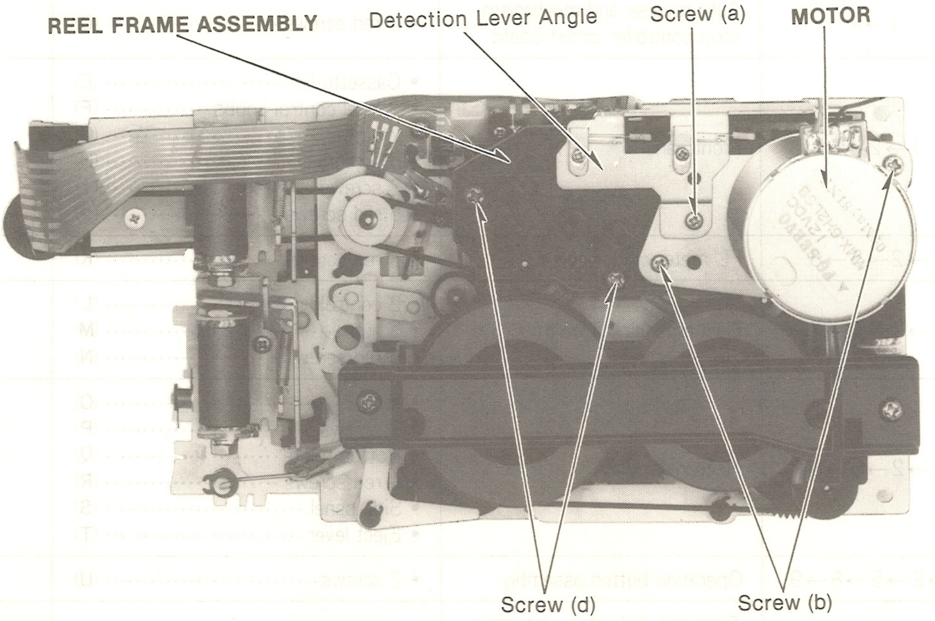

REEL FRAME ASSEMBLY
Detection Lever Angle
Screw (a)
MOTOR
Screw (d)
Screw (b)

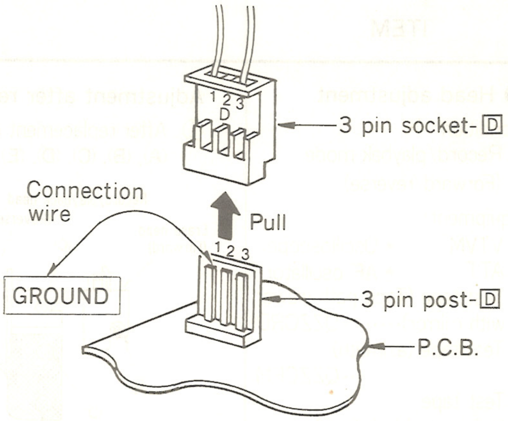
Fig. 2

MEASUREMENT AND ADJUSTMENT METHODS

Tape selector (Tape mode switching)

For measurement adjustment with test tapes without tape detection holes, switch tape modes as follows.
(For normal tape mode, just insert a normal tape into the cassette holder.)

- * Metal tape mode setting:
  Metal tape mode is obtained by disconnecting the 3 pin socket D from the 3 pin post D on the P.C.B. (Printed Circuit Board).
- * CrO2 tape mode setting:
  First, disconnect the 3 pin socket D in the same way as above. Then, as illustrated in the figure right, connect the terminal-1 of the 3 pin post to the ground with a connection wire.


1 2 3
D
3 pin socket-D
Connection wire
Pull
1 2 3
GROUND
3 pin post-D
P.C.B.

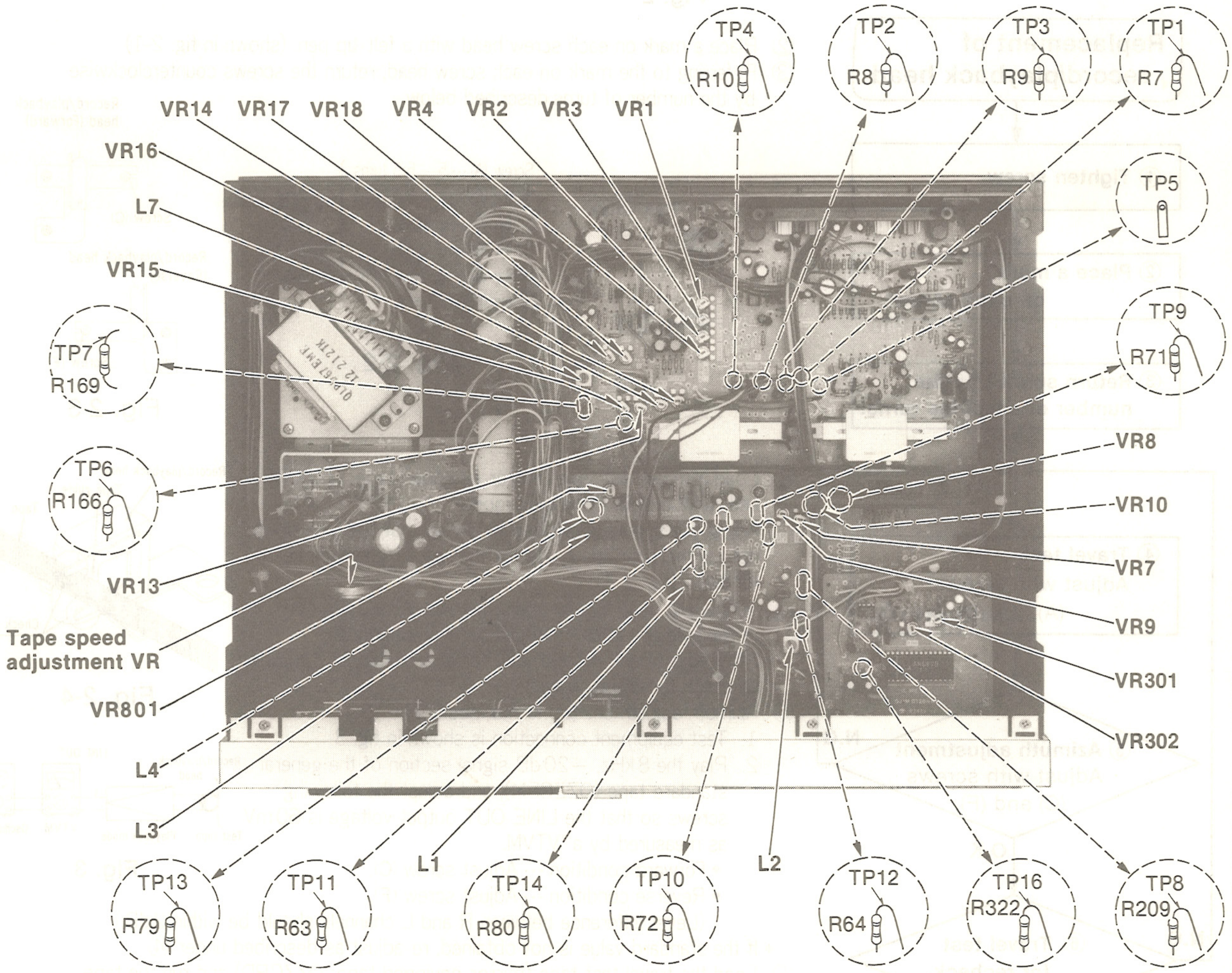

TP4
R10
TP2
R8
TP3
R9
TP1
R7
VR14
VR17
VR18
VR4
VR2
VR3
VR1
VR16
L7
VR15
TP5
TP9
R71
TP7
R169
TP6
R166
VR8
VR10
VR7
VR9
VR301
VR302
VR13
Tape speed adjustment VR
VR801
L4
L3
L1
L2
TP13
R79
TP11
R63
TP14
R80
TP10
R72
TP12
R64
TP16
R322
TP8
R209

Fig. 1

NOTES:

1. When a test tape is used, it must be inserted in the cassette holder so that is label can be seen in both forward and reverse modes. (The opposite side cannot be used.)
2. Keep good condition, set switches and controls in the following positions, unless otherwise specified.

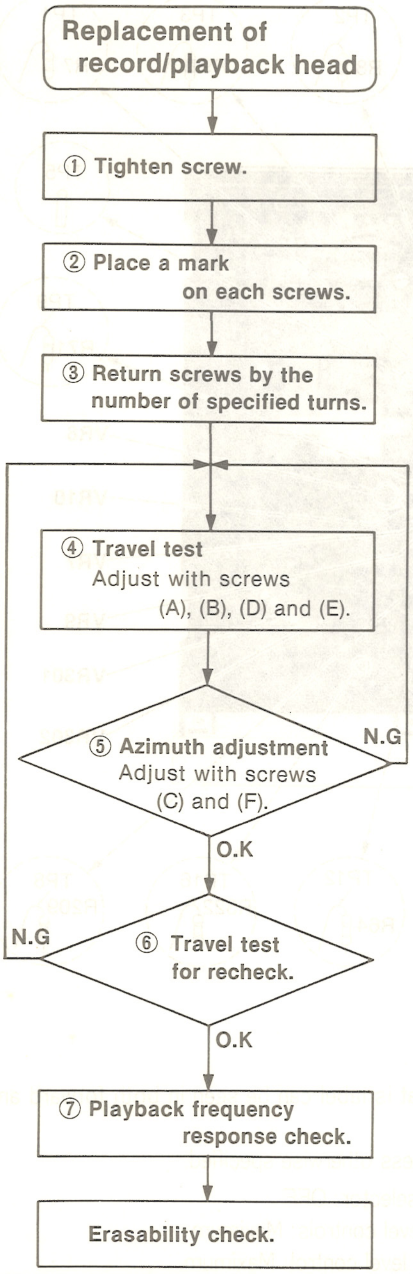
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20±5°C (68±9°F)
- Dolby NR switch: OUT
- Music selector: OFF
- Input level controls: Maximum
- Output level control: Maximum

ITEM	MEASUREMENT & ADJUSTMENT

Ⓐ Head adjustment

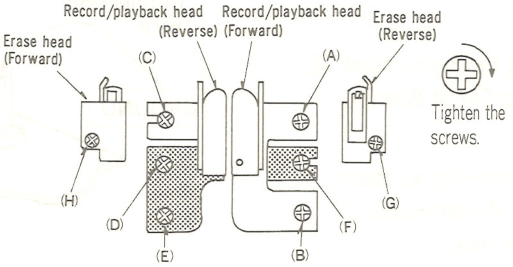
Condition:
- * Record/playbak mode. (Forward/reverse)

Equipment:
- * VTVM
- * Oscilloscope
- * ATT
- * AF oscillator
- * Test tape (Tape path viewer with mirror)········QZZCRD
- * Test tape (azimuth) ···QZZCFM
- * Test tape (reference blank tape) ···QZZCRZ for Metal


Replacement of record/playback head
① Tighten screw.
② Place a mark on each screws.
③ Return screws by the number of specified turns.
④ Travel test Adjust with screws (A), (B), (D) and (E).
⑤ Azimuth adjustment Adjust with screws (C) and (F).
N.G
O.K
⑥ Travel test for recheck.
N.G
O.K
⑦ Playback frequency response check.
Erasability check.

Adjustment after record/playback head replacement

① After replacement of the record/playback head, evenly tighten the six record/playback head screws, (A), (B), (C), (D), (E), (F) in the clockwise direction. Then tighten them completely.


Record/playback head (Reverse)
Record/playback head (Forward)
Erase head (Forward)
Erase head (Reverse)
(C)
(A)
(H)
(D)
(E)
(B)
(F)
(G)
Tighten the screws.

Screw (A): for height adjustment
Screw (B): for tilt adjustment
Screw (C): for azimuth adjustment
} Record/playback head (Forward)

Screw (D): for height adjustment
Screw (E): for tilt adjustment
Screw (F): for azimuth adjustment
} Record/playback head (Reverse)

Screw (G): for height adjustment } Erase head (Reverse)

Screw (H): for height adjustment } Erase head (Forward)

Fig. 2

② Place a mark on each screw head with a felt-tip pen. (shown in fig. 2-1)

③ Referring to the mark on each screw head, return the screws counterclockwise by the number of turns described below.

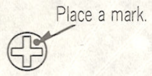

Place a mark.

Fig. 2-1

Screw (A) ··· 5 – 5.5 turns
Screw (B) ··· 2 – 2.5 turns
Screw (C) ··· 2 turns
Screw (D) ··· 3 turns
Screw (E) ··· 2 – 2.5 turns
Screw (F) ··· 2 turns

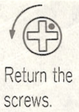

Return the screws.

Fig. 2-2

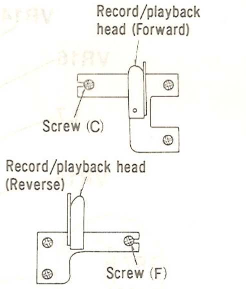

Record/playback head (Forward)
Screw (C)
Record/playback head (Reverse)
Screw (F)

Fig. 2-3

④ Load a travel test tape (mirror-equipped tape: QZZCRD) and run the tape in the play mode.
Adjust the screws described below so that the tape does not contact the tape guide for the record/playback head. (shown in fig. 2-4)
- Forward condition ··· Adjust screws (A) and (B).
- Reverse condition ··· Adjust screws (D) and (E).

* After adjustment, run the tape for approximately 3 minutes to check for zigzag travel.

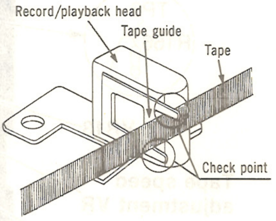

Record/playback head
Tape guide
Tape
Check point

Fig. 2-4

⑤ Azimuth adjustment (at normal position)
1. Test equipment connection is shown in fig. 3.
2. Play the 8 kHz, –20 dB signal section of the general standard tape (QZZCFM), and adjust the following screws so that the LINE OUT output voltage is 60 mV as measured by a VTVM.
   - Forward condition ··· Adjust screw (C).
   - Reverse condition ··· Adjust screw (F).

   (Level difference between R and L channels should be within 2 dB.)

* If the standard value is not obtained, re-adjust as described under ④.

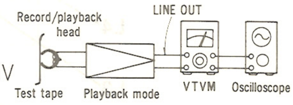
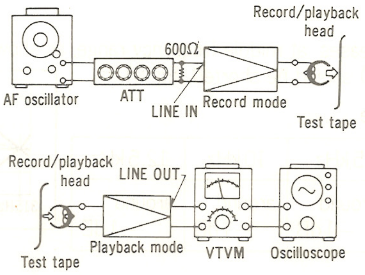
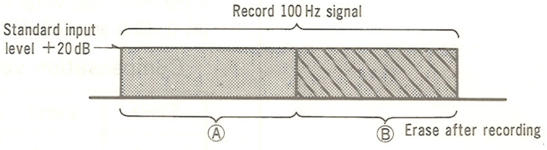
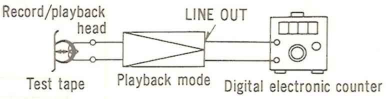

Record/playback head
LINE OUT
Test tape
Playback mode
VTVM
Oscilloscope

Fig. 3

⑥ Load the travel test tape (mirror-equipped tape: QZZCRD) and run the tape in the play mode. Check for zigzag travel.

* If zigzag travel occurs, check adjustment items ④ and ⑤ and adjust as required.

⑦ Playback frequency response check
Playback frequency equalizer adjustment section of the general standard tape (QZZCFM), and check that the frequency response at 12.5 kHz is $^{+4.5}_{-2}$ dB of that at 315 Hz.

ITEM	MEASUREMENT & ADJUSTMENT
	⑧ Erasing ratio check 1. Test equipment connection is shown in fig. 4. 2. Load reference blank test tape (QZZCRZ) (metal tape). 3. Set the tape selector to metal position. 4. Supply 100 Hz signal from AF oscillator through ATT to LINE IN. 5. Adjust the ATT so that the output level at LINE OUT becomes 0.7 V (The input level at this condition is termed the standard input level). 6. Adjust the ATT so that the input level is 20 dB above the standard input level. 7. Press the record and playback buttons. 8. After recording, erase portion Ⓑ by setting the input level controls to minimum under a no-signal condition (shown in fig. 4-1).  Record/playback head 600Ω AF oscillator ATT LINE IN Record mode Test tape Record/playback head LINE OUT Test tape Playback mode VTVM Oscilloscope Fig. 4  Record 100 Hz signal Standard input level +20 dB Ⓐ Ⓑ Erase after recording Fig. 4-1 10. Playback portions Ⓐ and Ⓑ, and measure output levels (dB) at LINE OUT. 11. Perform measurements for both channels. Erasing ratio (dB) = Measured value of portion Ⓐ − Measured value of portion Ⓑ. Reference value: Greater than 52 dB
Ⓑ Tape speed accuracy Condition: * Playback mode (Forward/reverse) Equipment: * Digital electronic counter or frequency counter * Test tape ··· QZZCWAT	1. Test equipment connection is shown in fig. 5. 2. Playback test tape (QZZCWAT 3,000 Hz), and supply playback signal to frequency counter. 3. Take measurement at middle section of tape. 4. Measure this frequency. 5. On the basis of 3,000 Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3{,}000}{3{,}000} \times 100\ (\%)$ where, f = measured value  Record/playback head LINE OUT Test tape Playback mode Digital electronic counter Fig. 5 Standard value: ±1.5% Adjustment method 1. Playback the test tape (middle). 2. Adjust tape speed adjustment VR (shown in fig. 1) so that frequency becomes 3,000 Hz. (Please use non metal type screwdriver when you adjust tape speed on this unit.) Tape speed fluctuation Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3{,}000} \times 100\ (\%)$ f_1 = maximum value, f_2 = minimum value Standard value: 1%

ITEM	MEASUREMENT & ADJUSTMENT

Ⓒ Playback frequency response

Condition:
- ∗ Playback mode (Forward/reverse)
- ∗ Normal tape mode
- ∗ Output level control ··· MAX

Equipment:
- ∗ VTVM ∗ Oscilloscope
- ∗ Test tape ··· QZZCFM

Measurement

1. Test equipment connection is shown in fig. 3.
2. Place UNIT into playback mode.
3. Playback the frequency response test tape (QZZCFM).
4. Measure output level at 315 Hz, 12.5 kHz, 8 kHz, 4 kHz, 1 kHz, 250 Hz, 125 Hz and 63 Hz and compare each output level with the standard frequency 315 Hz, at LINE OUT.
5. Make measurement for both channels.
6. Make sure that the measured value is within the range specified in the frequency response chart (fig. 6).

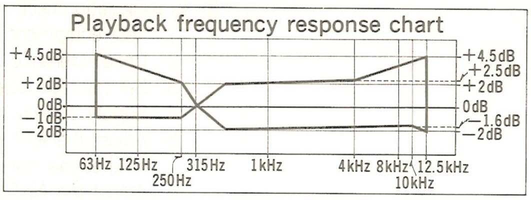


Fig. 6

Adjustment method

1. If the measured value increases at middle frequency range, as shown in fig. 7, P.C.B. connection points (a) (L-CH) and (a') (R-CH) should be shorted (fig. 9).

Compensation value

1 kHz	2 kHz	5 kHz	10 kHz	12.5 kHz
around −0.4 dB	around −0.7 dB	around −1 dB	around −1 dB	around −1 dB

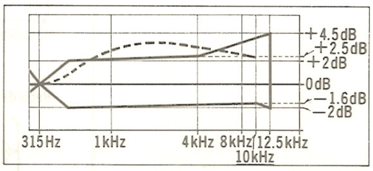


Fig. 7

2. If the measured value decreases at middle frequency range, as shown in fig. 8, P.C.B. connection points (a) (L-CH) and (a') (R-CH) should be opened.

Compensation value

1 kHz	2 kHz	5 kHz	10 kHz	12.5 kHz
around +0.4 dB	around +0.7 dB	around +1 dB	around +1 dB	around +1 dB

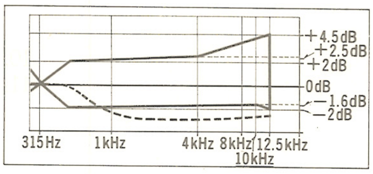


Fig. 8

3. Make measurement again according to steps from (2) to (6) of the "Measurement" above.

Connection point

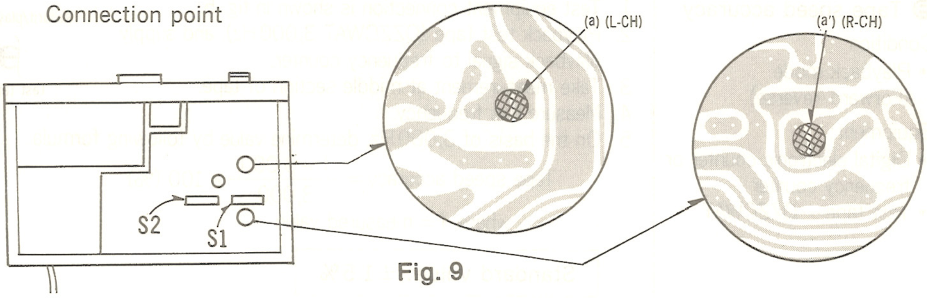


Fig. 9

Ⓓ Playback gain

Condition:
- ∗ Playback mode (Forward/reverse)
- ∗ Output level control ··· MAX

Equipment:
- ∗ VTVM ∗ Oscilloscope
- ∗ Test tape ··· QZZCFM

1. Test equipment connection is shown in fig. 3.
2. Playback standard recording level portion on test tape (QZZCFM 315 Hz), and using VTVM measure the output level at LINE OUT jack.
3. Make measurement for both channels.

Standard value: 0.7 V ± 1 dB

Adjustment method

1. If measured value is not standard, adjust the following VR.
   Forward ······ VR1 (L-CH), VR2 (R-CH)
   Reverse ······ VR3 (L-CH), VR4 (R-CH)
2. After adjustment, check "Playback frequency response" again.

ITEM | MEASUREMENT & ADJUSTMENT

Ⓔ Bias leakage

Condition:
- * Record mode (Forward/reverse)

Equipment:
- * VTVM
- * Oscilloscope

1. Test equipment connection is shown in fig. 10.
2. Place UNIT into record mode.
3. Adjust trap coil L3 (L-CH), L4 (R-CH), so that measured value on VTVM becomes minimum.
4. Take adjustment for both channels.

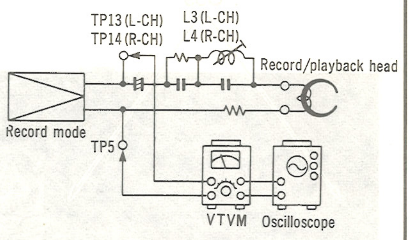

TP13 (L-CH)
TP14 (R-CH)
L3 (L-CH)
L4 (R-CH)
Record/playback head
Record mode
TP5
VTVM
Oscilloscope

Fig. 10

Ⓕ Erase current

Condition:
- * Record mode (Forward/reverse)
- * Normal tape mode
- * CrO₂ tape mode
- * Metal tape mode

Equipment:
- * VTVM
- * Oscilloscope

1. Test equipment connection is shown in fig. 11.
2. Place UNIT into record and metal tape mode and then measure voltage at test point 6.
3. Determine erase current with the following formula:

$$\text{Erase current (A)} = \frac{\text{Voltage across both ends of R166}}{1\ (\Omega)}$$

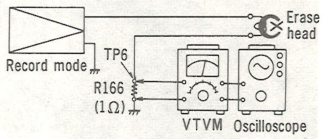

Erase head
Record mode
TP6
R166 (1Ω)
VTVM
Oscilloscope

Fig. 11

Standard value: 170±5 mA (Metal)

4. If measured value is not within standard adjust VR17 (Forward), VR18 (Reverse).
5. Set the tape selector to each position.
6. Make sure that the measured value is within standard.

Standard value: around 80 mA (Normal), around 110 mA (CrO₂)

Ⓖ Overall frequency response

Condition:
- * Record/playback mode (Forward/reverse)
- * Normal tape mode
- * CrO₂ tape mode
- * Metal tape mode
- * Input level controls ··· MAX
- * Output level control ··· MAX
- * Standard input level;
  - MIC ········ −72±3 dB
  - LINE IN ··· −24±3 dB

Equipment:
- * VTVM
- * AF oscillator
- * ATT
- * Oscilloscope
- * Resistor (600 Ω)
- * Test tape (reference blank tape)
  - ··· QZZCRA for Normal
  - ··· QZZCRX for CrO₂
  - ··· QZZCRZ for Metal

Note:

Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).

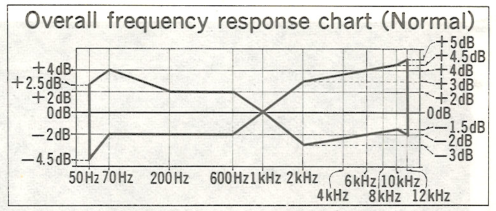


Fig. 12

Overall frequency response adjustment by recording bias current

(Recording equalizer is fixed)

1. Make connections as shown in fig. 13.
2. Place UNIT into normal tape mode and load the test tape (QZZCRA).
3. Input a 1 kHz, −24 dB signal through LINE IN. Place the set into record mode.
4. Fine adjust the ATT to obtain 0.7 V LINE OUT output.
   * Make sure that the input signal level is −24±3 dB with 0.7 V output voltage.
5. Adjust the ATT to reduce the input signal level by 20 dB.
6. Adjust the AF oscillator to generate 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12 kHz signals, and record these signals on the test tape.
7. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 12).
   (If the curve is within the charted specifications, proceed to steps 8, 9, 10 and 11.)

   If the curve is not within the charted specifications, adjust as follows;

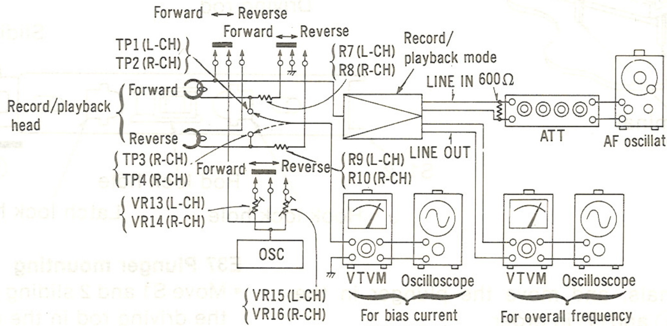

Forward ←→ Reverse
Forward ←→ Reverse
TP1 (L-CH)
TP2 (R-CH)
R7 (L-CH)
R8 (R-CH)
Record/playback mode
LINE IN 600Ω
Record/playback head
Forward
Reverse
TP3 (R-CH)
TP4 (R-CH)
Forward ←→ Reverse
R9 (L-CH)
R10 (R-CH)
LINE OUT
ATT
AF oscillator
VR13 (L-CH)
VR14 (R-CH)
OSC
VR15 (L-CH)
VR16 (R-CH)
VTVM
Oscilloscope
For bias current measurement.
VTVM
Oscilloscope
For overall frequency response measurement.

Fig. 13

ITEM | MEASUREMENT & ADJUSTMENT

Adjustment Ⓐ:

When the curve exceeds the overall frequency response chart specifications (fig. 12) as shown in fig. 14.

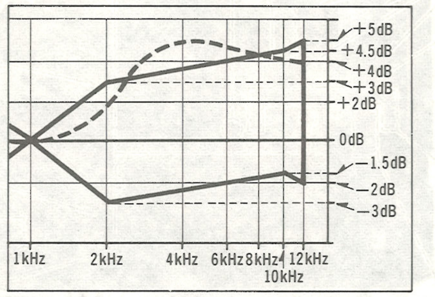


Fig. 14

1) Increase bias current by turning volumes as follows,
   Forward ··· VR13 (L-CH), VR14 (R-CH)
   Reverse ··· VR15 (L-CH), VR16 (R-CH)
   (See fig. 1 on page 7.)
2) Repeat steps 6 and 7 to confirm.
   (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 12.)
3) If the curve still exceeds the specifications (fig. 12), increase bias current further and repeat steps 6 and 7.

Adjustment Ⓑ:

When the curve falls below the overall frequency response chart specifications (fig. 12) as shown in fig. 15.

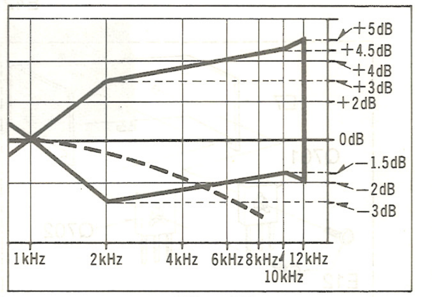


Fig. 15

1) Reduce bias current by turning volumes as follows,
   Forward ··· VR13 (L-CH), VR14 (R-CH)
   Reverse ··· VR15 (L-CH), VR16 (R-CH)
   (See fig. 1 on page 7.)
2) Repeat steps 6 and 7 to confirm.
   (Proceed to steps 8, 9, 10 and 11 if the curve is now within the charted specifications in fig. 12.)
3) If the curve still falls below the charted specifications (fig. 12), reduce bias current further and repeat steps 6 and 7.

8. Place UNIT into CrO₂ tape mode.
9. Change test tape to QZZCRX, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz, 12.5 kHz and 14 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO₂ tapes (fig. 16).
10. Place UNIT into metal tape mode change test tape to QZZCRZ, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz, 12.5 kHz and 14 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 16).

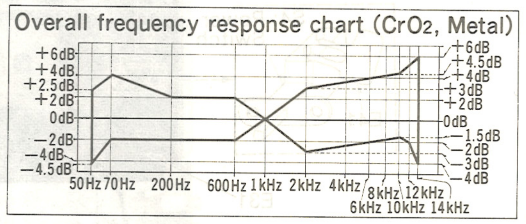


Fig. 16

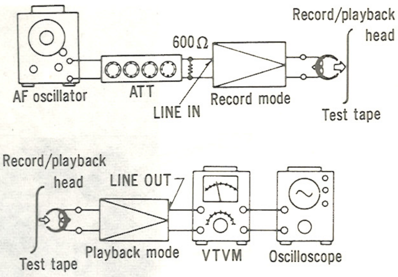
11. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode.
    * Read voltage on VTVM and calculate bias current by following formula:

$$\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$$

Standard value:

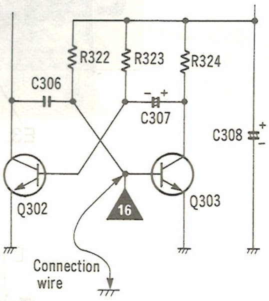
around 400 μA (Normal position)
around 600 μA (CrO₂ position)
around 950 μA (Metal position)
: measured at
Forward ··· TP1 (L-CH) and TP2 (R-CH)
Reverse ··· TP3 (L-CH) and TP4 (R-CH)

<table>
<tr><th>ITEM</th><th>MEASUREMENT & ADJUSTMENT</th></tr>
<tr><td>

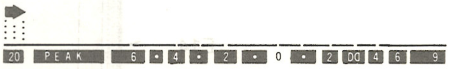
Ⓗ Overall gain
Condition:
* Record/playback mode (Forward/reverse)
* Normal tape mode
* Input level controls ··· MAX
* Output level control ··· MAX
* Standard input level;
MIC ········ −72±3 dB
LINE IN ··· −24±3 dB
Equipment:
* VTVM * AF oscillator
* ATT * Oscilloscope
* Resistor (600 Ω)
* Test tape (reference blank tape) ··· QZZCRA for Normal</td><td>1. Test equipment connection is shown in fig. 17.
2. Place UNIT into normal tape mode, and load the test tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply 1 kHz signal (−24 dB) from AF oscillator, through ATT to LINE IN.
5. Adjust ATT until monitor level at LINE OUT becomes 0.7 V.
6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.7 V.
7. If measured value is not 0.7 V, adjust the following VR.
Forward ··· VR7 (L-CH), VR8 (R-CH)
Reverse ··· VR9 (L-CH), VR10 (R-CH)
8. Repeat from step (2).


Record/playback head
600 Ω
AF oscillator
ATT
LINE IN
Record mode
Test tape
Record/playback head
LINE OUT
Test tape
Playback mode
VTVM
Oscilloscope

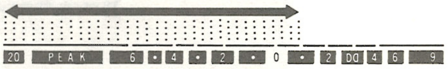
Fig. 17</td></tr>
<tr><td>

Ⓘ Fluorescent meter
Condition:
* Record mode
* Normal tape mode
* Input level controls ··· MAX
* Output level control ··· MAX
Equipment:
* VTVM * AF oscillator
* ATT</td><td>1. Test equipment connection is shown in fig. 17.
2. As shown in fig. 18, connect the base of Q303 and ground.
3. Supply 1 kHz signal (−24 dB) to the LINE IN jack, then press the record button.
4. Adjust the ATT so that the output level at LINE OUT jack becomes 0.7 V (The input level at this condition is termed the standard input level).
5. Adjustment at "−20 dB":
A. Adjust the ATT so that input level is −20 dB below standard recording level.
B. Adjust VR301 so that the −20 dB segment lights up in the −20±0.8 dB range (L-CH ONLY) (See fig. 19).
6. Adjustment at "0 dB":
A. Adjust the ATT so that the output level at LINE OUT jack becomes 0.7 V (The input level at this condition is termed the standard input level).
B. Adjust VR302 so that the +1 dB segment lights up in the 0±0.2 dB range of the standard input level (See fig. 20).
7. Repeat twice between steps 5 and 6 above.
8. Adjust ATT and check that all segments light up when an input signal level is increased to 10 dB higher than the standard input level (See fig. 21).


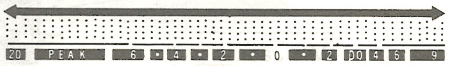
R322
R323
R324
C306
C307
C308
Q302
Q303
16
Connection wire

Fig. 18


20
PEAK
6
4
2
0
2
DO
4
6
9

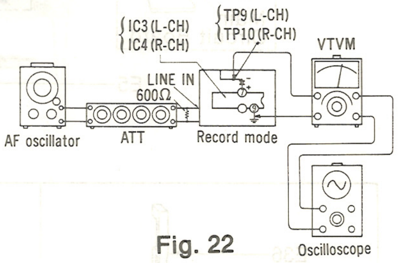
Fig. 19


20
PEAK
6
4
2
0
2
DO
4
6
9

Fig. 20


20
PEAK
6
4
2
0
2
DO
4
6
9

Fig. 21</td></tr>
<tr><td>

Ⓙ Dolby NR circuit
Condition:
* Record mode
* Dolby NR switch ··· IN/OUT
* Input level controls ··· MAX
Equipment:
* VTVM * AF oscillator
* ATT * Oscilloscope
* Resistor (600 Ω)</td><td>1. Test equipment connection is shown in fig. 22.
2. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain −34.5 dB at TP9 (L-CH), TP10 (R-CH) (frequency 5 kHz).
3. Confirm that the value at IN position is 8 (±2.5) dB greater than the value at OUT position of Dolby NR switch.


IC3 (L-CH)
IC4 (R-CH)
TP9 (L-CH)
TP10 (R-CH)
VTVM
LINE IN
600Ω
AF oscillator
ATT
Record mode
Oscilloscope

Fig. 22</td></tr>
<tr><td>

Ⓚ Photo sensor circuit</td><td></td></tr>
</table>

NOTE:

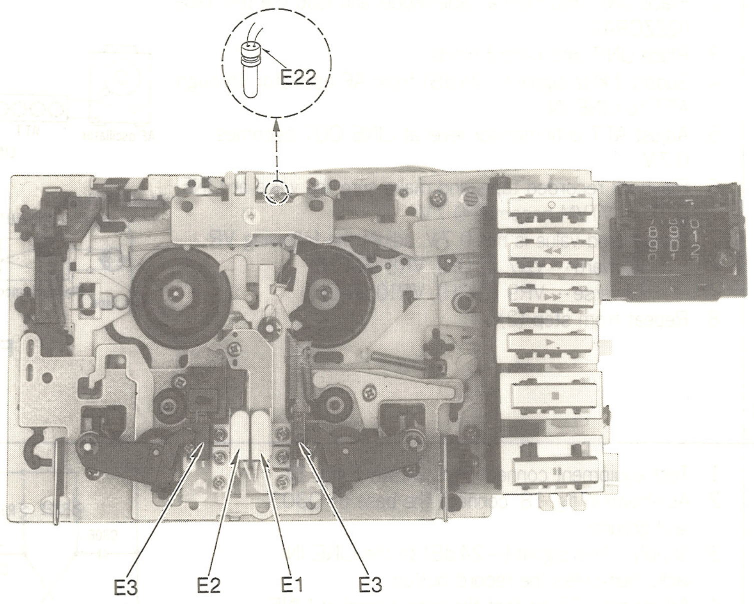
When adjusting the photo sensor circuit, leave the front panel, cassette lid and indication plate in place.
(External light can cause the photo sensor in the cassette holder to malfunction and makes accurate adjustment impossible.)

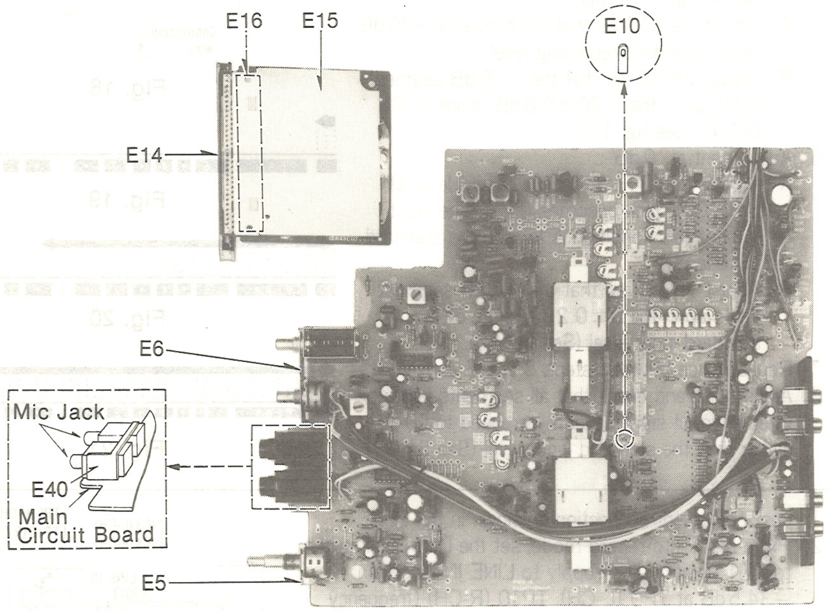
Sensitivity adjustment

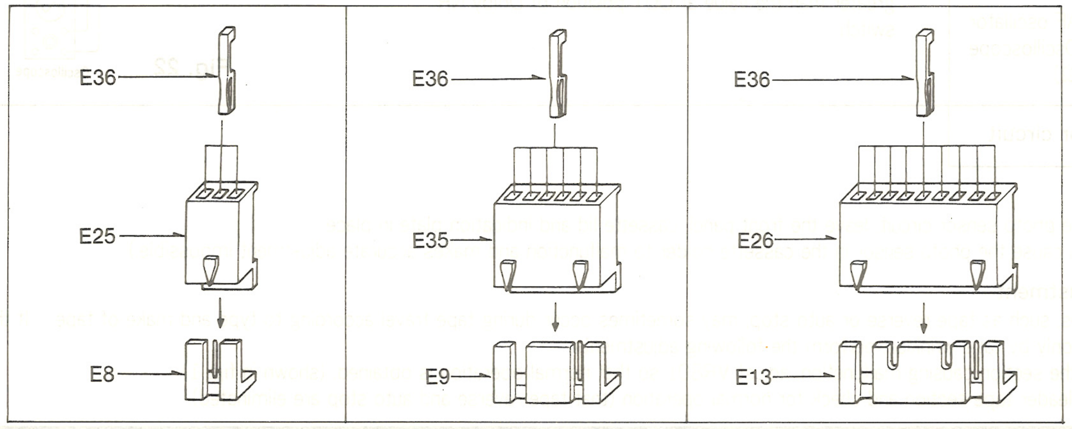
Some malfunctions, such as tape reverse or auto stop, may sometimes occur during tape travel according to type and make of tape. If the trouble is caused only by tape wrinkles, perform the following adjustments.

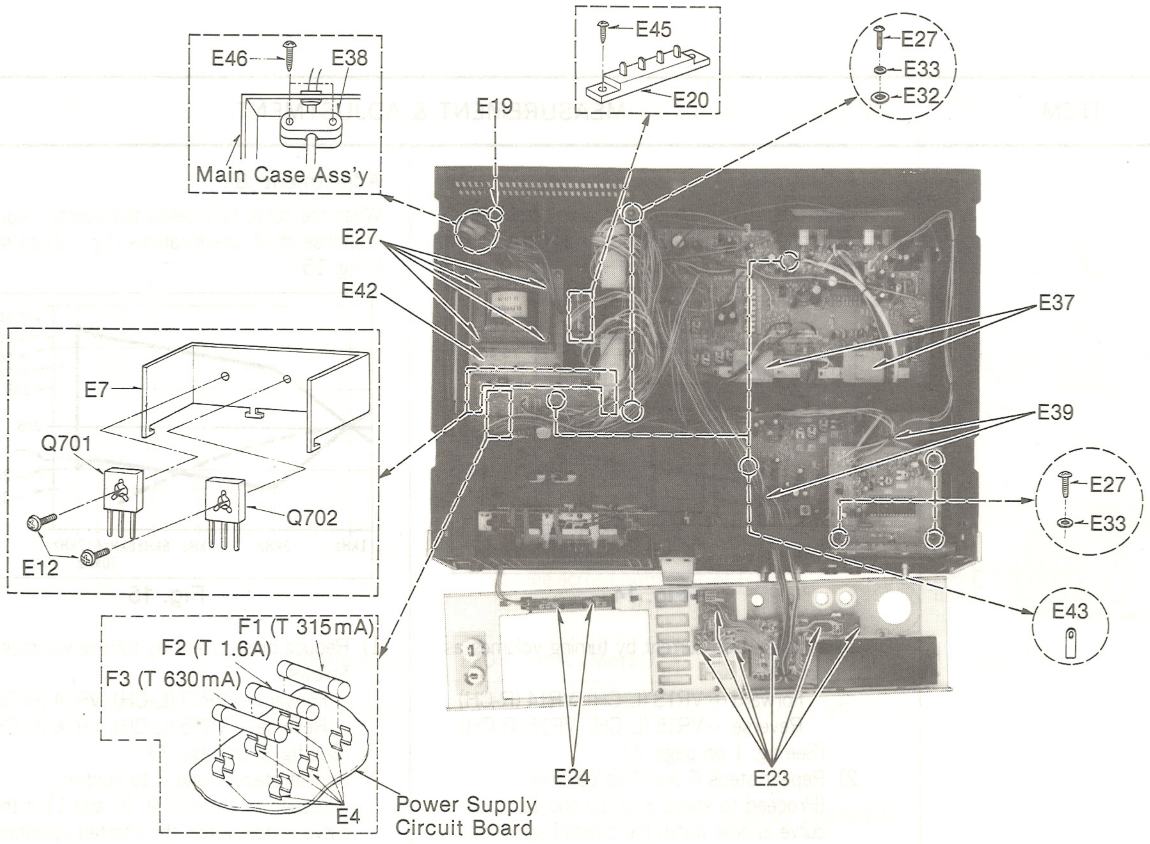
1. While playing the section causing malfunction, adjust VR801 so that normal operation is obtained. (shown in fig. 1)
2. Then play the leader tape section and check for normal operation (that tape reverse and auto stop are eliminated).

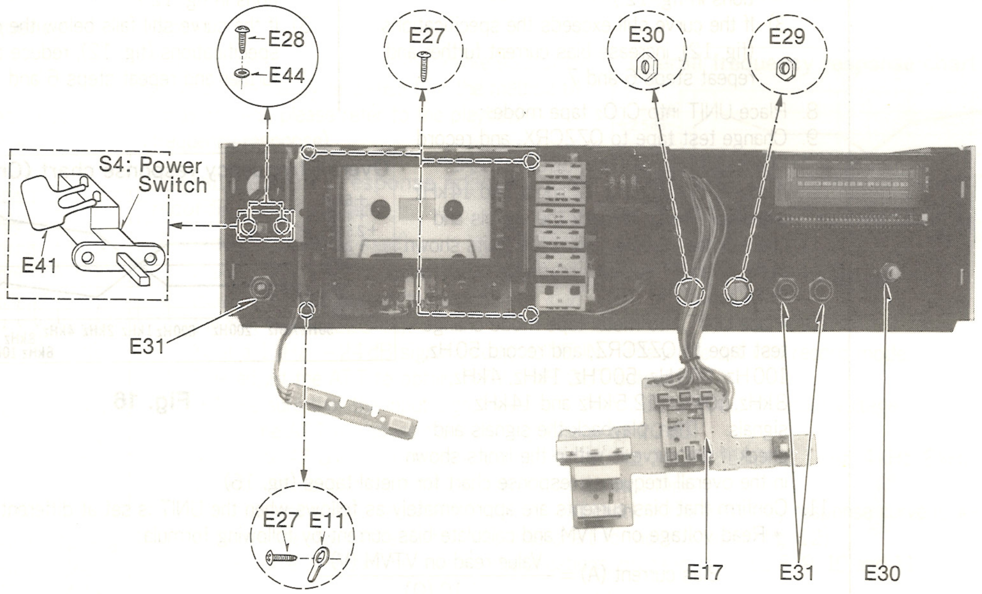
ELECTRICAL PARTS LOCATION

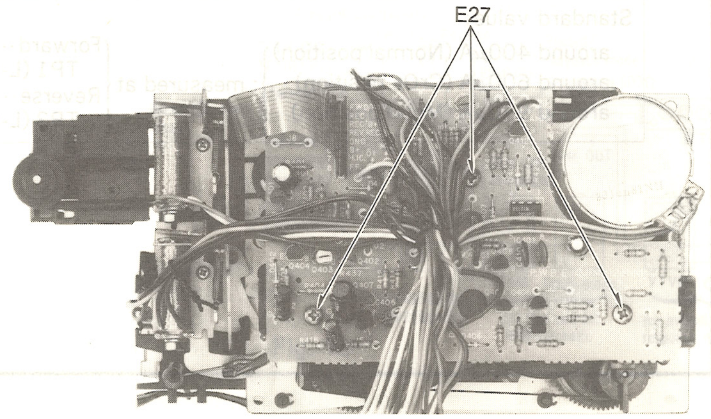

E22
E3
E2
E1
E3

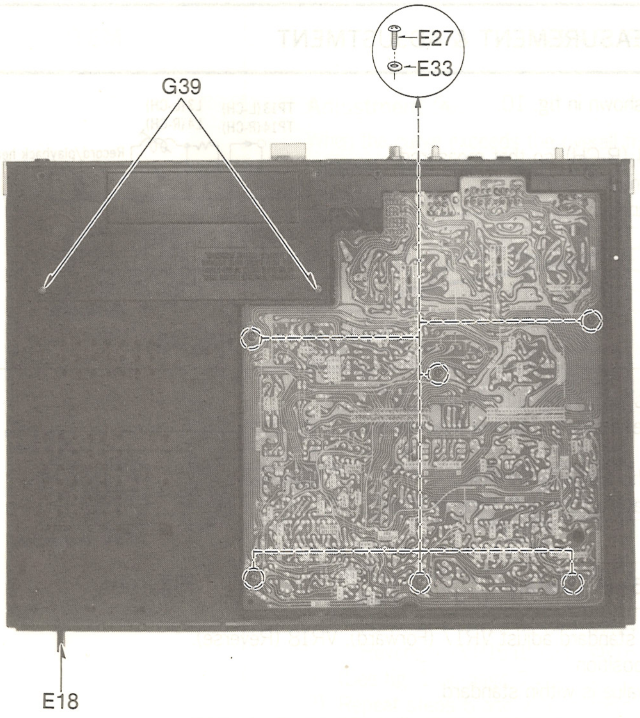

E16
E15
E10
E14
E6
Mic Jack
E40
Main Circuit Board
E5

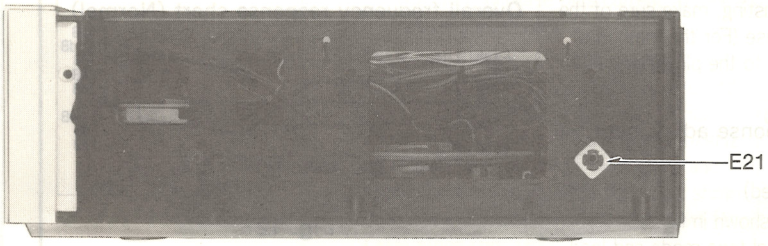

E36
E25
E8
E36
E35
E9
E36
E26
E13


E46
E38
Main Case Ass'y
E45
E20
E19
E27
E33
E32
E27
E42
E37
E7
Q701
Q702
E12
E39
E27
E33
E43
F1 (T 315mA)
F2 (T 1.6A)
F3 (T 630mA)
Power Supply Circuit Board
E4
E24
E23


E28
E44
E27
E30
E29
S4: Power Switch
E41
E31
E27
E11
E17
E31
E30



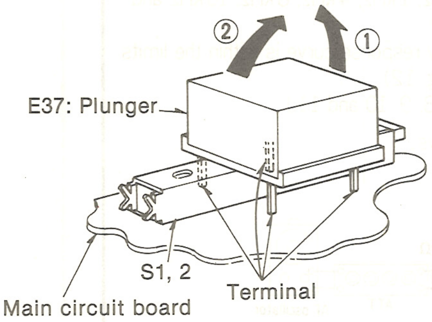


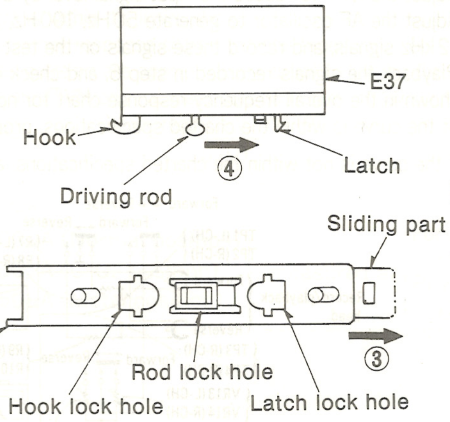


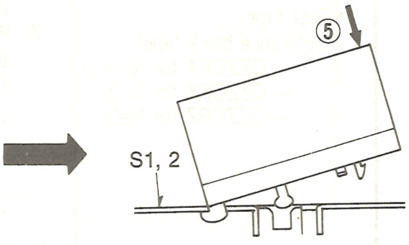
REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
	ELECTRICAL PARTS	
E1	QWY4130Y	Record/Playback Head (Forward)
E2	QWY4130YE	Record/Playback Head (Reverse)
E3	QWY2148Y	Erase Head
E4 ⚠	QTF1054	Fuse Holder
E5	QTSM0062	Earth Plate (for Input VR)
E6	QTSM0063	Earth Plate (for Output VR)
E7	QTHM0015	Heat Sink
E8	QJP1921TN	3 Pin Post
E9	QJP1922TN	6 Pin Post
E10	QJT1061	Pin Terminal
E11	QTD1001	Lug Terminal
E12	XTN3+8B	Tapping Screw ⊕3×8
E13	QJP1923TN	9 Pin Post
E14	QSiFL005F	FL Meter
E15	QTSM0061	Meter Shield Case
E16	QTWM0037	Insulating Sheet
E17	QKJM0073	LED Holder
E18 ⚠	SJA88	AC Power Cord
E19	QBJ1425	Cord Bushing
E20	QJT4017	4 Pin Terminal
E21	QJC0025	Earth Plate-A
E22	XAMQ44S200	Pilot Lamp
E23	XTN26+8B	Tapping Screw ⊕2.6×8
E24	XTN3+6B	Tapping Screw ⊕3×6
E25	QJS1921TN	3 Pin Socket
E26	QJS1923TN	9 Pin Socket
E27	XTN3+10B	Tapping Screw ⊕3×10
E28	XSN3+6S	Screw ⊕3×6
E29	XNS8	Nut 8ϕ
E30	XNS9	Nut 9ϕ
E31	QNQ1070	Nut
E32	QBK7178	Washer
E33	XWG3	Washer 3ϕ
E34	XWA3B	〃
E35	QJS1922TN	6 Pin Socket
E36	QJT1054	Contact
E37	EMR2012	Plunger
E38	QTD1164	Cord Clamper
E39	RHR993ZA	Wire Clamper
E40	QTSM0067	Shield Plate (for MIC Jack)
E41	QTW1195	Spark Killer Cover
E42	QMAM0149	Transformer Angle
E43	QJT1067	Pin Terminal
E44	XWC3B	Washer 3ϕ
E45	XTN3+12B	Tapping Screw ⊕3×12
E46	XTN3+16B	Tapping Screw ⊕3×16



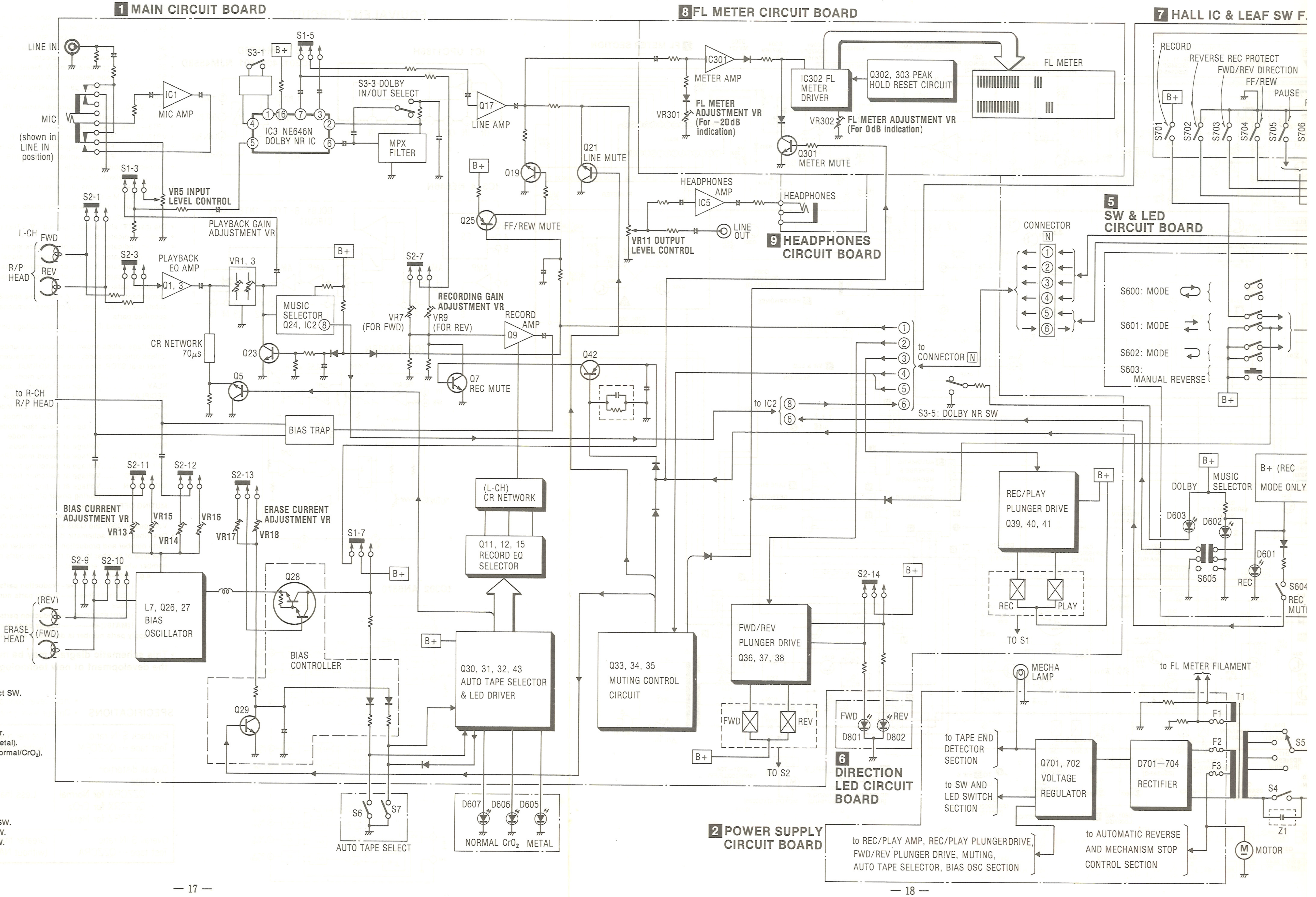




E37 Plunger removal
- Unsolder four terminals, and move the plunger in the direction of arrows ① and ② in order.

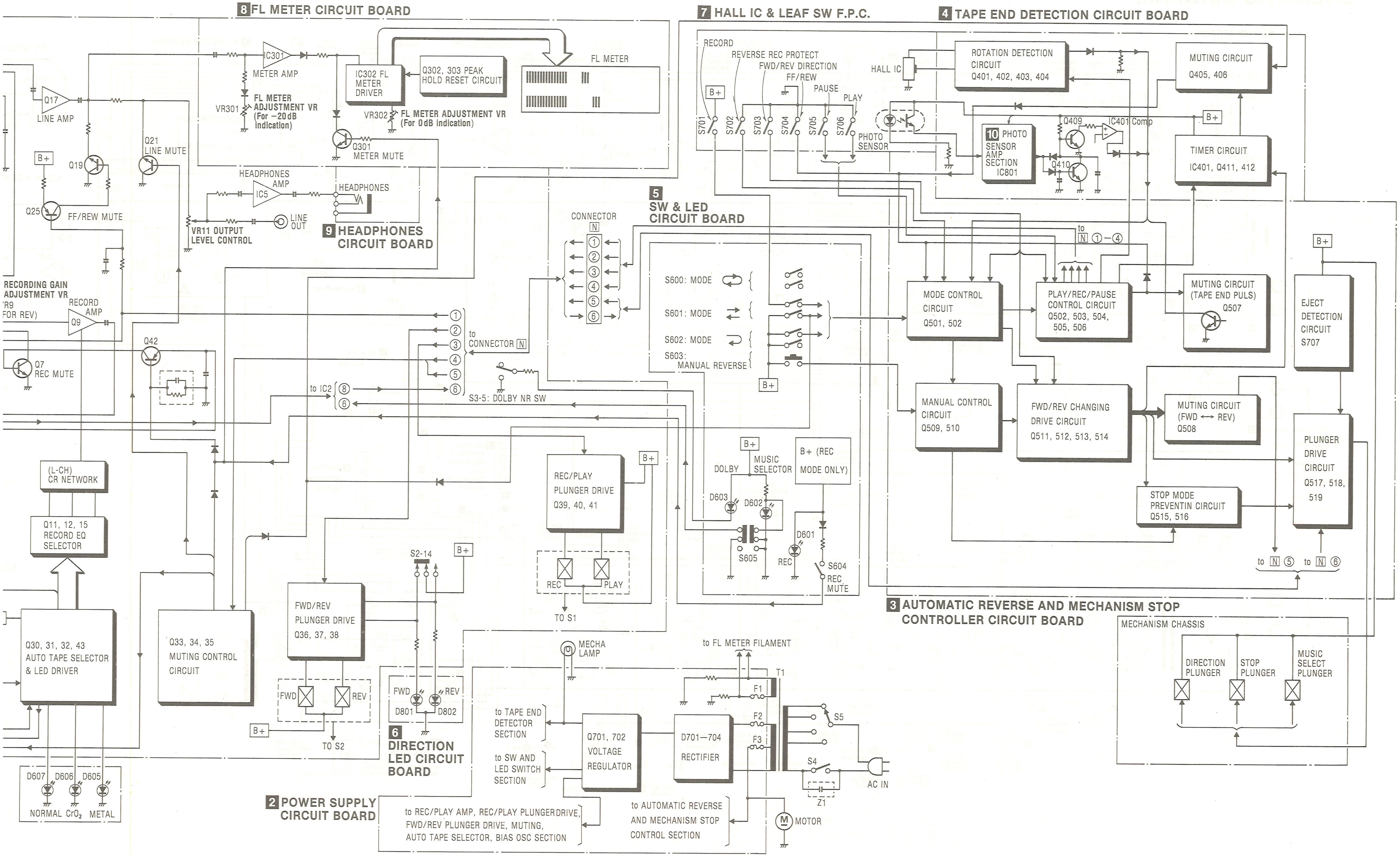
E37 Plunger mounting
- Move S1 and 2 sliding part in the direction of arrow ③ and the driving rod in the direction of arrow ④.
- Insert plunger hook into the its lock hole and push the plunger down in the direction of arrow ⑤.
- Resolder four plunger terminals.

BLOCK DIAGRAM

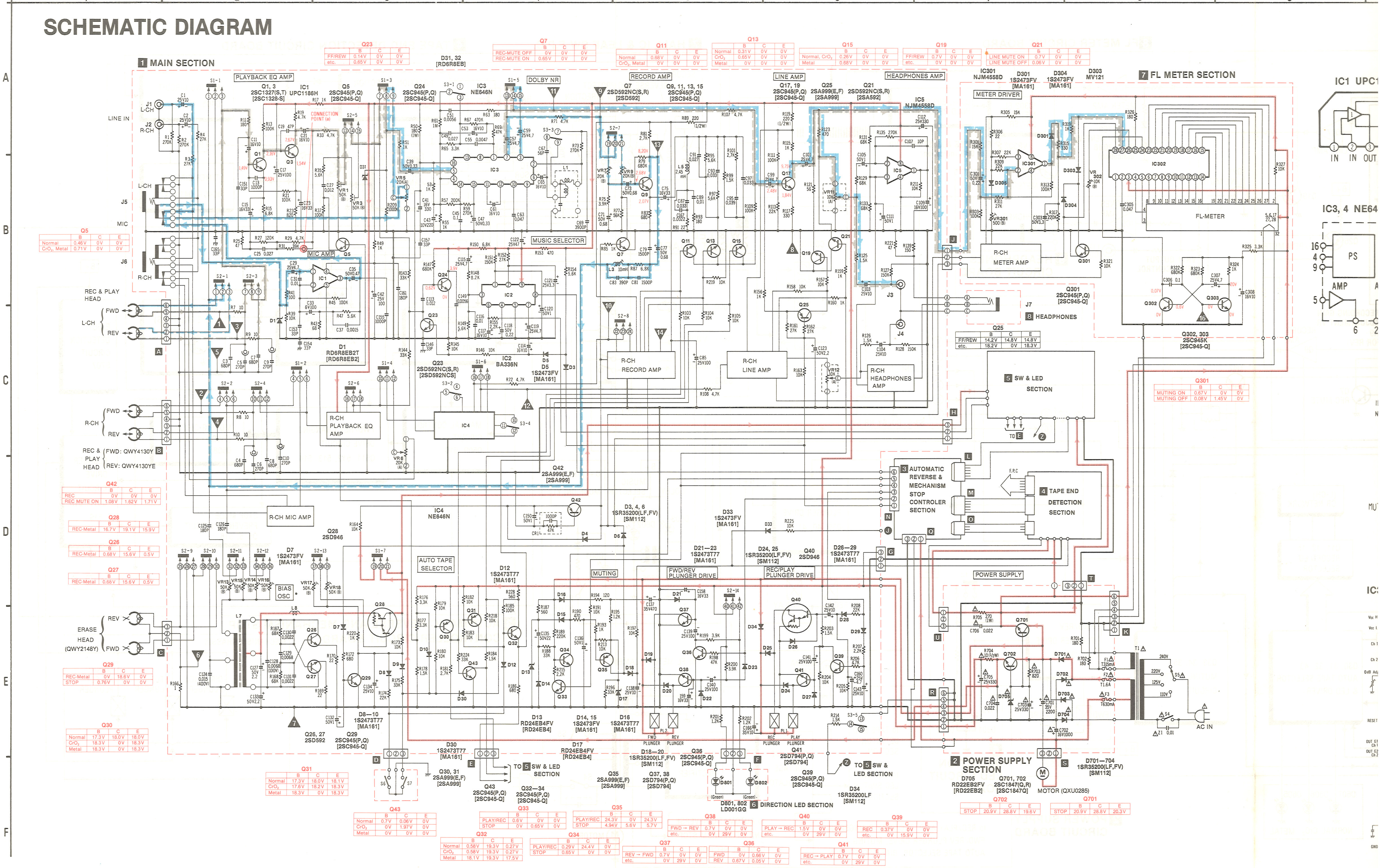

1 MAIN CIRCUIT BOARD
8 FL METER CIRCUIT BOARD
7 HALL IC & LEAF SW F
LINE IN
MIC
(shown in LINE IN position)
IC1 MIC AMP
S3-1
B+
S1-5
IC3 NE646N DOLBY NR IC
S3-3 DOLBY IN/OUT SELECT
MPX FILTER
Q17 LINE AMP
S1-3
VR5 INPUT LEVEL CONTROL
S2-1
L-CH
FWD
REV
R/P HEAD
S2-3
PLAYBACK EQ AMP
Q1, 3
PLAYBACK GAIN ADJUSTMENT VR
VR1, 3
MUSIC SELECTOR Q24, IC2 ⑧
S2-7
RECORDING GAIN ADJUSTMENT VR
VR7 (FOR FWD)
VR9 (FOR REV)
RECORD AMP
Q9
Q7 REC MUTE
CR NETWORK 70μs
Q23
Q5
to R-CH R/P HEAD
BIAS TRAP
Q19
Q21 LINE MUTE
Q25
FF/REW MUTE
Q42
IC301 METER AMP
VR301
FL METER ADJUSTMENT VR (For −20dB indication)
IC302 FL METER DRIVER
Q302, 303 PEAK HOLD RESET CIRCUIT
FL METER
VR302
FL METER ADJUSTMENT VR (For 0dB indication)
Q301 METER MUTE
HEADPHONES AMP
IC5
HEADPHONES
VR11 OUTPUT LEVEL CONTROL
LINE OUT
9 HEADPHONES CIRCUIT BOARD
CONNECTOR N
① ② ③ ④ ⑤ ⑥
to CONNECTOR N
to IC2 ⑧ ⑥
S3-5: DOLBY NR SW
5 SW & LED CIRCUIT BOARD
RECORD
REVERSE REC PROTECT
FWD/REV DIRECTION
FF/REW
PAUSE
S701 S702 S703 S704 S705 S706
S600: MODE
S601: MODE
S602: MODE
S603: MANUAL REVERSE
S2-11
S2-12
BIAS CURRENT ADJUSTMENT VR
VR13 VR14 VR15 VR16
S2-13
ERASE CURRENT ADJUSTMENT VR
VR17 VR18
S1-7
S2-9
S2-10
(REV)
(FWD)
ERASE HEAD
L7, Q26, 27 BIAS OSCILLATOR
Q28
BIAS CONTROLLER
Q29
S6
S7
AUTO TAPE SELECT
(L-CH) CR NETWORK
Q11, 12, 15 RECORD EQ SELECTOR
Q30, 31, 32, 43 AUTO TAPE SELECTOR & LED DRIVER
D607 D606 D605
NORMAL CrO₂ METAL
Q33, 34, 35 MUTING CONTROL CIRCUIT
FWD/REV PLUNGER DRIVE Q36, 37, 38
FWD
REV
TO S2
REC/PLAY PLUNGER DRIVE Q39, 40, 41
REC
PLAY
TO S1
S2-14
D801 D802
6 DIRECTION LED CIRCUIT BOARD
DOLBY
MUSIC SELECTOR
B+ (REC MODE ONLY
D603
D602
D601
S605
REC
S604 REC MUTI
MECHA LAMP
to FL METER FILAMENT
T1
F1 F2 F3
S5
S4
Z1
to TAPE END DETECTOR SECTION
to SW AND LED SWITCH SECTION
Q701, 702 VOLTAGE REGULATOR
D701—704 RECTIFIER
2 POWER SUPPLY CIRCUIT BOARD
to REC/PLAY AMP, REC/PLAY PLUNGER DRIVE, FWD/REV PLUNGER DRIVE, MUTING, AUTO TAPE SELECTOR, BIAS OSC SECTION
to AUTOMATIC REVERSE AND MECHANISM STOP CONTROL SECTION
MOTOR

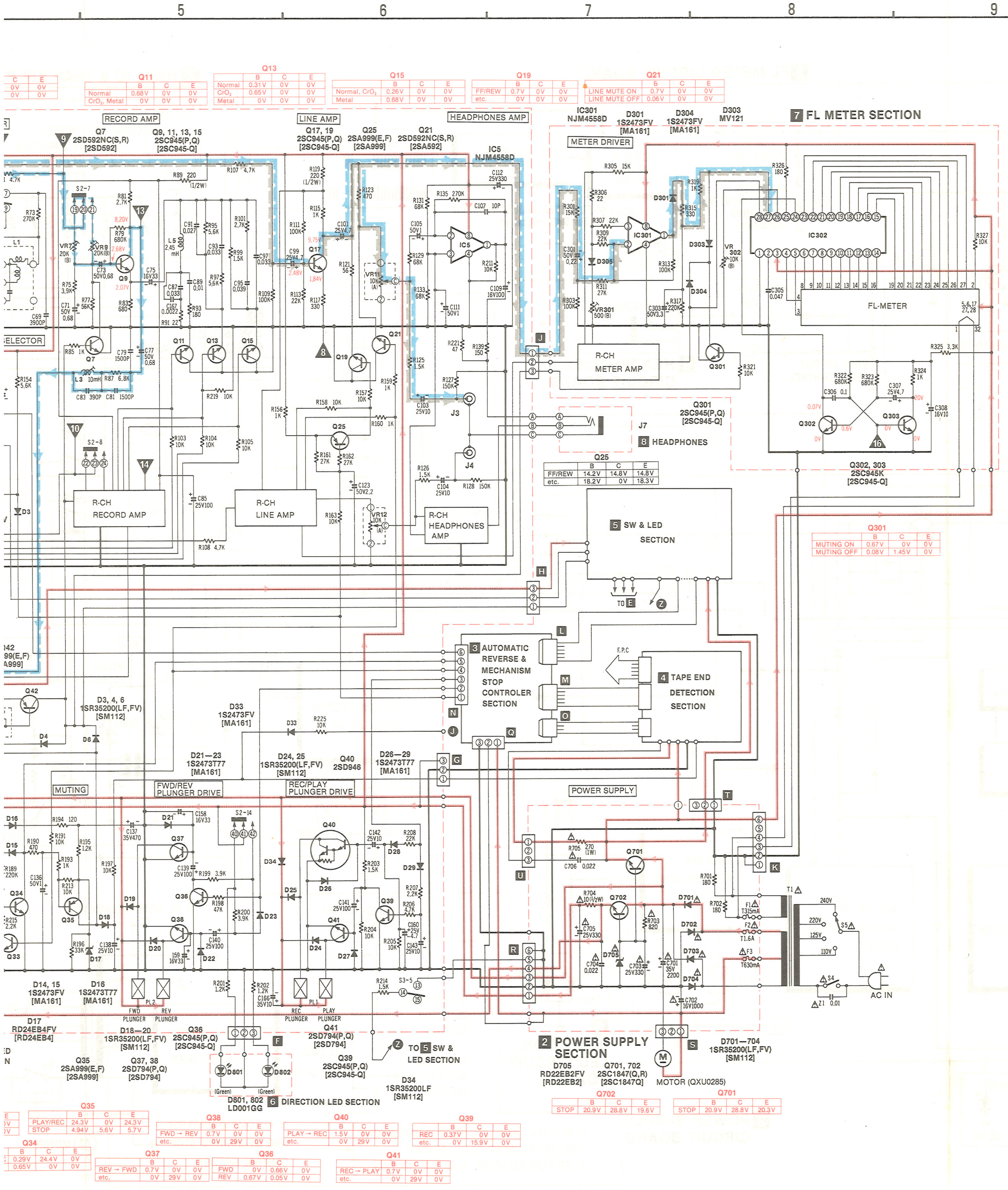
NOTES:

S1 ....Record/Playback select SW.
S2 ....FWD/REV select SW.
S3 ....Dolby NR IN/OUT SW.
S4 ....Power ON/OFF SW.
S5 ....Power voltage selector.
S6 ....Tape detection SW (Metal).
S7 ....Tape detection SW (Normal/CrO₂).
S600 ......Mode SW (⟲).
S601 ......Mode SW (⇄).
S602 ......Mode SW (⊃).
S603 ......Manual Reverse SW.
S604 ......Rec Mute SW.
S605 ......Music select SW.
S701 ......Rec plunger ON/OFF SW.
S702 ......Reverse rec protect SW.
S703 ......FWD/REV direction SW.
S704 ......FF/REW mode SW.
S705 ......Pause mode SW.
S706 ......Play mode SW.
S707 ......Eject detection SW.


8 FL METER CIRCUIT BOARD
IC301
METER AMP
FL METER ADJUSTMENT VR (For −20dB indication)
VR301
IC302 FL METER DRIVER
Q302, 303 PEAK HOLD RESET CIRCUIT
FL METER
VR302
FL METER ADJUSTMENT VR (For 0dB indication)
Q301
METER MUTE
Q17
LINE AMP
Q21
LINE MUTE
B+
Q19
Q25
FF/REW MUTE
HEADPHONES AMP
IC5
HEADPHONES
LINE OUT
VR11 OUTPUT LEVEL CONTROL
9 HEADPHONES CIRCUIT BOARD
RECORDING GAIN ADJUSTMENT VR
R9 (FOR REV)
RECORD AMP
Q9
Q42
Q7
REC MUTE
(L-CH) CR NETWORK
Q11, 12, 15 RECORD EQ SELECTOR
Q30, 31, 32, 43 AUTO TAPE SELECTOR & LED DRIVER
Q33, 34, 35 MUTING CONTROL CIRCUIT
D607 D606 D605
NORMAL CrO₂ METAL
CONNECTOR N
① ② ③ ④ ⑤ ⑥
to CONNECTOR N
to IC2 ⑧ ⑥
S3-5: DOLBY NR SW
FWD/REV PLUNGER DRIVE Q36, 37, 38
FWD REV
TO S2
S2-14
FWD REV D801 D802
6 DIRECTION LED CIRCUIT BOARD
REC/PLAY PLUNGER DRIVE Q39, 40, 41
REC PLAY
TO S1
2 POWER SUPPLY CIRCUIT BOARD
MECHA LAMP
to TAPE END DETECTOR SECTION
to SW AND LED SWITCH SECTION
Q701, 702 VOLTAGE REGULATOR
D701—704 RECTIFIER
to FL METER FILAMENT
T1 F1 F2 F3
S5 S4 Z1
AC IN
MOTOR
to REC/PLAY AMP, REC/PLAY PLUNGER DRIVE, FWD/REV PLUNGER DRIVE, MUTING, AUTO TAPE SELECTOR, BIAS OSC SECTION
to AUTOMATIC REVERSE AND MECHANISM STOP CONTROL SECTION
7 HALL IC & LEAF SW F.P.C.
RECORD
REVERSE REC PROTECT
FWD/REV DIRECTION
FF/REW
PAUSE
PLAY
S701 S702 S703 S704 S705 S706
PHOTO SENSOR
HALL IC
5 SW & LED CIRCUIT BOARD
S600: MODE
S601: MODE
S602: MODE
S603: MANUAL REVERSE
DOLBY
MUSIC SELECTOR
B+ (REC MODE ONLY)
D603 D602 D601
S605
REC
S604 REC MUTE
4 TAPE END DETECTION CIRCUIT BOARD
ROTATION DETECTION CIRCUIT Q401, 402, 403, 404
MUTING CIRCUIT Q405, 406
10 PHOTO SENSOR AMP SECTION IC801
Q409
IC401 Comp
Q410
TIMER CIRCUIT IC401, Q411, 412
to N ①−④
MODE CONTROL CIRCUIT Q501, 502
PLAY/REC/PAUSE CONTROL CIRCUIT Q502, 503, 504, 505, 506
MUTING CIRCUIT (TAPE END PULS) Q507
EJECT DETECTION CIRCUIT S707
MANUAL CONTROL CIRCUIT Q509, 510
FWD/REV CHANGING DRIVE CIRCUIT Q511, 512, 513, 514
MUTING CIRCUIT (FWD ←→ REV) Q508
PLUNGER DRIVE CIRCUIT Q517, 518, 519
STOP MODE PREVENTIN CIRCUIT Q515, 516
to N ⑤ to N ⑥
3 AUTOMATIC REVERSE AND MECHANISM STOP CONTROLLER CIRCUIT BOARD
MECHANISM CHASSIS
DIRECTION PLUNGER
STOP PLUNGER
MUSIC SELECT PLUNGER

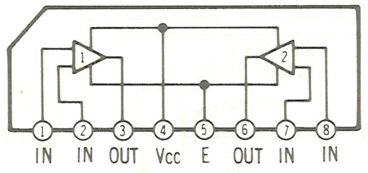
SCHEMATIC DIAGRAM


1 MAIN SECTION
PLAYBACK EQ AMP
RECORD AMP
LINE AMP
HEADPHONES AMP
DOLBY NR
MUSIC SELECTOR
MIC AMP
7 FL METER SECTION
METER DRIVER
FL-METER
R-CH METER AMP
R-CH PLAYBACK EQ AMP
R-CH RECORD AMP
R-CH LINE AMP
R-CH HEADPHONES AMP
R-CH MIC AMP
8 HEADPHONES
5 SW & LED SECTION
3 AUTOMATIC REVERSE & MECHANISM STOP CONTROLER SECTION
4 TAPE END DETECTION SECTION
POWER SUPPLY
2 POWER SUPPLY SECTION
6 DIRECTION LED SECTION
AUTO TAPE SELECTOR
MUTING
FWD/REV PLUNGER DRIVE
REC/PLAY PLUNGER DRIVE
BIAS OSC
LINE IN
L-CH
R-CH
MIC
REC & PLAY HEAD
FWD
REV
REC & PLAY HEAD FWD: QWY4130Y REV: QWY4130YE
ERASE HEAD (QWY2148Y)
MOTOR (QXU0285)
AC IN
IC1 UPC1186H
IC3 NE646N
IC4 NE646N
IC5 NJM4558D
IC301 NJM4558D
IC302
Q1, 3 2SC1327(S,T) [2SC1328-S]
Q5 2SC945(P,Q) [2SC945-Q]
Q7 2SD592NC(S,R) [2SD592]
Q9, 11, 13, 15 2SC945(P,Q) [2SC945-Q]
Q17, 19 2SC945(P,Q) [2SC945-Q]
Q21 2SD592NC(S,R) [2SA592]
Q23 2SD592NC(S,R) [2SD592NCS]
Q24 2SC945(P,Q) [2SC945-Q]
Q25 2SA999(E,F) [2SA999]
Q42 2SA999(E,F) [2SA999]
Q301 2SC945(P,Q) [2SC945-Q]
Q302, 303 2SC945K [2SC945-Q]
Q701, 702 2SC1847(Q,R) [2SC1847Q]
D31, 32 [RD6R8EB]
D1 RD6R8EB2T [RD6R8EB2]
D5 1S2473FV [MA161]
D301 1S2473FV [MA161]
D304 1S2473FV [MA161]
D303 MV121
D3, 4, 6 1SR35200(LF,FV) [SM112]
D33 1S2473FV [MA161]
D7 1S2473FV [MA161]
D12 1S2473T77 [MA161]
D21—23 1S2473T77 [MA161]
D24, 25 1SR35200(LF,FV) [SM112]
Q40 2SD946
D26—29 1S2473T77 [MA161]
Q28 2SD946
Q26, 27 2SD592
Q29 2SC945(P,Q) [2SC945-Q]
D8—10 1S2473T77 [MA161]
D30 1S2473T77 [MA161]
Q30, 31 2SA999(E,F) [2SA999]
Q43 2SC945(P,Q) [2SC945-Q]
Q32—34 2SC945(P,Q) [2SC945-Q]
D13 RD24EB4FV [RD24EB4]
D14, 15 1S2473FV [MA161]
D16 1S2473T77 [MA161]
D17 RD24EB4FV [RD24EB4]
Q35 2SA999(E,F) [2SA999]
D18—20 1SR35200(LF,FV) [SM112]
Q36 2SC945(P,Q) [2SC945-Q]
Q37, 38 2SD794(P,Q) [2SD794]
Q41 2SD794(P,Q) [2SD794]
Q39 2SC945(P,Q) [2SC945-Q]
D801, 802 LD001GG
D34 1SR35200LF [SM112]
D705 RD22EB2FV [RD22EB2]
D701—704 1SR35200(LF,FV) [SM112]
TO 5 SW & LED SECTION
Q5: Normal B 0.46V C 0V E 0V; CrO2, Metal B 0.71V C 0V E 0V
Q23: FF/REW B 0.14V C 0V E 0V; etc. B 0.65V C 0V E 0V
Q7: REC-MUTE OFF B 0V C 0V E 0V; REC-MUTE ON B 0.65V C 0V E 0V
Q11: Normal B 0.68V C 0V E 0V; CrO2, Metal B 0V C 0V E 0V
Q13: Normal B 0.31V C 0V E 0V; CrO2 B 0.65V C 0V E 0V; Metal B 0V C 0V E 0V
Q15: Normal, CrO2 B 0.26V C 0V E 0V; Metal B 0.68V C 0V E 0V
Q19: FF/REW B 0.7V C 0V E 0V; etc. B 0V C 0V E 0V
Q21: LINE MUTE ON B 0.7V C 0V E 0V; LINE MUTE OFF B 0.06V C 0V E 0V
Q25: FF/REW B 14.2V C 14.8V E 14.8V; etc. B 18.2V C 0V E 18.3V
Q301: MUTING ON B 0.67V C 0V E 0V; MUTING OFF B 0.08V C 1.45V E 0V
Q42: REC B 0V C 0V E 0V; REC MUTE ON B 1.08V C 1.62V E 1.71V
Q28: REC-Metal B 16.7V C 19.1V E 15.9V
Q26: REC-Metal B 0.68V C 15.6V E 0.5V
Q27: REC-Metal B 0.66V C 15.6V E 0.5V
Q29: REC-Metal B 0V C 18.6V E 0V; STOP B 0.76V C 0V E 0V
Q30: Normal B 17.3V C 18.0V E 18.0V; CrO2 B 18.3V C 0V E 18.3V; Metal B 18.3V C 0V E 18.3V
Q31: Normal B 17.3V C 18.0V E 18.1V; CrO2 B 17.6V C 18.2V E 18.3V; Metal B 18.3V C 0V E 18.3V
Q43: Normal B 0.7V C 0.06V E 0V; CrO2 B 0V C 1.97V E 0V; Metal B 0V C 0V E 0V
Q32: Normal B 0.58V C 19.3V E 0.27V; CrO2 B 0.58V C 19.3V E 0.27V; Metal B 18.1V C 19.3V E 17.5V
Q33: PLAY/REC B 0.6V C 0V E 0V; STOP B 0V C 0.65V E 0V
Q34: PLAY/REC B 0.29V C 24.4V E 0V; STOP B 0.65V C 0V E 0V
Q35: PLAY/REC B 24.3V C 0V E 24.3V; STOP B 4.94V C 5.6V E 5.7V
Q37: REV→FWD B 0.7V C 0V E 0V; etc. B 0V C 29V E 0V
Q38: FWD→REV B 0.7V C 0V E 0V; etc. B 0V C 29V E 0V
Q36: FWD B 0V C 0.56V E 0V; REV B 0.67V C 0.05V E 0V
Q40: PLAY→REC B 1.5V C 0V E 0V; etc. B 0V C 29V E 0V
Q41: REC→PLAY B 0.7V C 0V E 0V; etc. B 0V C 29V E 0V
Q39: REC B 0.37V C 0V E 0V; etc. B 0V C 15.9V E 0V
Q702: STOP B 20.9V C 28.8V E 19.6V
Q701: STOP B 20.9V C 28.8V E 20.3V

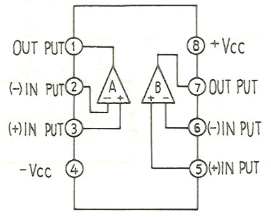

RECORD AMP
LINE AMP
HEADPHONES AMP
7 FL METER SECTION
METER DRIVER
IC302
FL-METER
R-CH METER AMP
R-CH RECORD AMP
R-CH LINE AMP
R-CH HEADPHONES AMP
J7
8 HEADPHONES
5 SW & LED SECTION
3 AUTOMATIC REVERSE & MECHANISM STOP CONTROLER SECTION
4 TAPE END DETECTION SECTION
MUTING
FWD/REV PLUNGER DRIVE
REC/PLAY PLUNGER DRIVE
POWER SUPPLY
2 POWER SUPPLY SECTION
6 DIRECTION LED SECTION
MOTOR (QXU0285)
AC IN

EQUIVALENT CIRCUIT

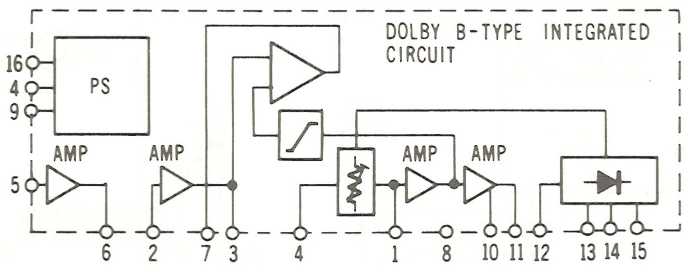
IC1 UPC1186H


IN
IN
OUT
Vcc
E
OUT
IN
IN

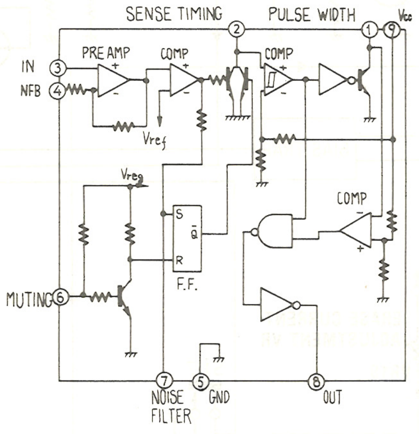
IC5 NJM4556D
IC301, 401, 801 NJM4558D


OUT PUT
(-)IN PUT
(+)IN PUT
-Vcc
+Vcc
OUT PUT
(-)IN PUT
(+)IN PUT

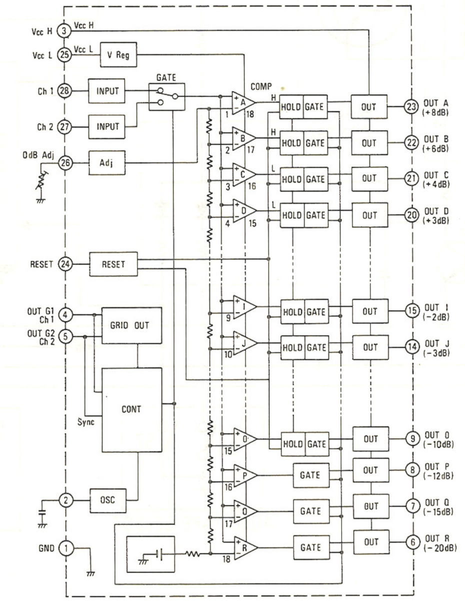
IC3, 4 NE646N


DOLBY B-TYPE INTEGRATED CIRCUIT
PS
AMP
AMP
AMP
AMP

IC2 BA336N


SENSE TIMING
PULSE WIDTH
IN
NFB
PRE AMP
COMP
COMP
COMP
MUTING
NOISE FILTER
GND
OUT
F.F.

IC302 AN6870


Vcc H
Vcc L
V Reg
GATE
COMP
Ch 1
Ch 2
INPUT
INPUT
0dB Adj
Adj
HOLD GATE
OUT
RESET
GRID OUT
CONT
Sync
OSC
GND

NOTES:

- S1 ....Record/Playback select SW (shown in playback position).
- S2 ....FWD/REV select SW (shown in forward position).
- S3 ....Dolby NR IN/OUT SW (shown in OUT position).
- S4 ....Power ON/OFF SW (shown in OFF position)
- S5 ....Power voltage selector.
- S6 ....Tape detection SW (Metal) (shown in OFF position)
- S7 ....Tape detection SW (Normal/CrO$_2$) (shown in OFF position).
- VR1—VR4.....Playback gain adjustment VR.
- VR5, 6 ....Input level controls.
- VR7—VR10....Recording gain adjustment VR.
- VR11, 12 ......Output level controls.
- VR13—VR16 Bias current adjustment VR.
- VR17, 18 ......Erase current adjustment VR.
- VR301 ....FL meter adjustment VR (−20dB indication).
- VR302 ....FL meter adjustment VR (0dB indication).
- Connection points (a) and (a′)......
  ......Playback frequency response adjustment points.
- Resistance are in homs (Ω) 1/4 watt unless specified otherwise.
  1K = 1,000Ω, M = 1,000KΩ.
- Capacity are in micro-farads (μF) unless specified otherwise.
  P = Pico-farads.
- The mark (▼) shows test point e.g. ▼ = Test point 1.
- (🟥) indicates B+ (bias).
- (▨) indicates the flow of playback signal (Forward).
- (▨) indicates the flow of playback signal (Reverse).
- (🟦) indicates the flow of recording signal (Forward).
- (🟦) indicates the flow of recording signal (Reverse).
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- Values indicated in ☐ are DC voltage between the chassis and electrical parts.
- All voltage values shown in circuitry are under no signal condition.
  Unless otherwise specified, voltage measurement conditions are that tape travel is at STOP, tape mode at NORMAL, and Dolby NR switch at OFF.
  REC ....Voltage at record mode.
  PLAY ....Voltage at playback mode.
  REC/PLAY ....Voltage at record/playback mode.
  Normal ....Voltage at Normal tape mode.
  CrO$_2$.................Voltage at CrO$_2$ tape mode.
  Metal ....Voltage at Metal tape mode.
  FWD ....Voltage at Forward mode.
  REV ....Voltage at Reverse mode.
  REC-MUTE ....Voltage at record mode (Rec mute: ON).
  FWD → REV ......Voltage at switching from FWD to REV modes.
  REV → FWD ......Voltage at switching from REV to FWD modes.
  MUTING ON ......Voltage at muting mode
  (During power off muting circuit is operating).
  MUTING OFF ......Voltage at non muting mode
  (During power off muting circuit is not operating).
  Voltages of Q302 and Q303 are taken when Q303 base is grounded.
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.

  e.g. Q1—4
  2SD1011(S,R,T)◄—Production parts number
  [2SD1011S]◄——Supply parts number
  D309
  QVD1S2473T◄—Production parts number
  [MA161]◄———Supply parts numbers
- **The supply parts number is described alone in the replacement parts list.**

- **This schematic diagram may be modified at any time with the development of new technology.**

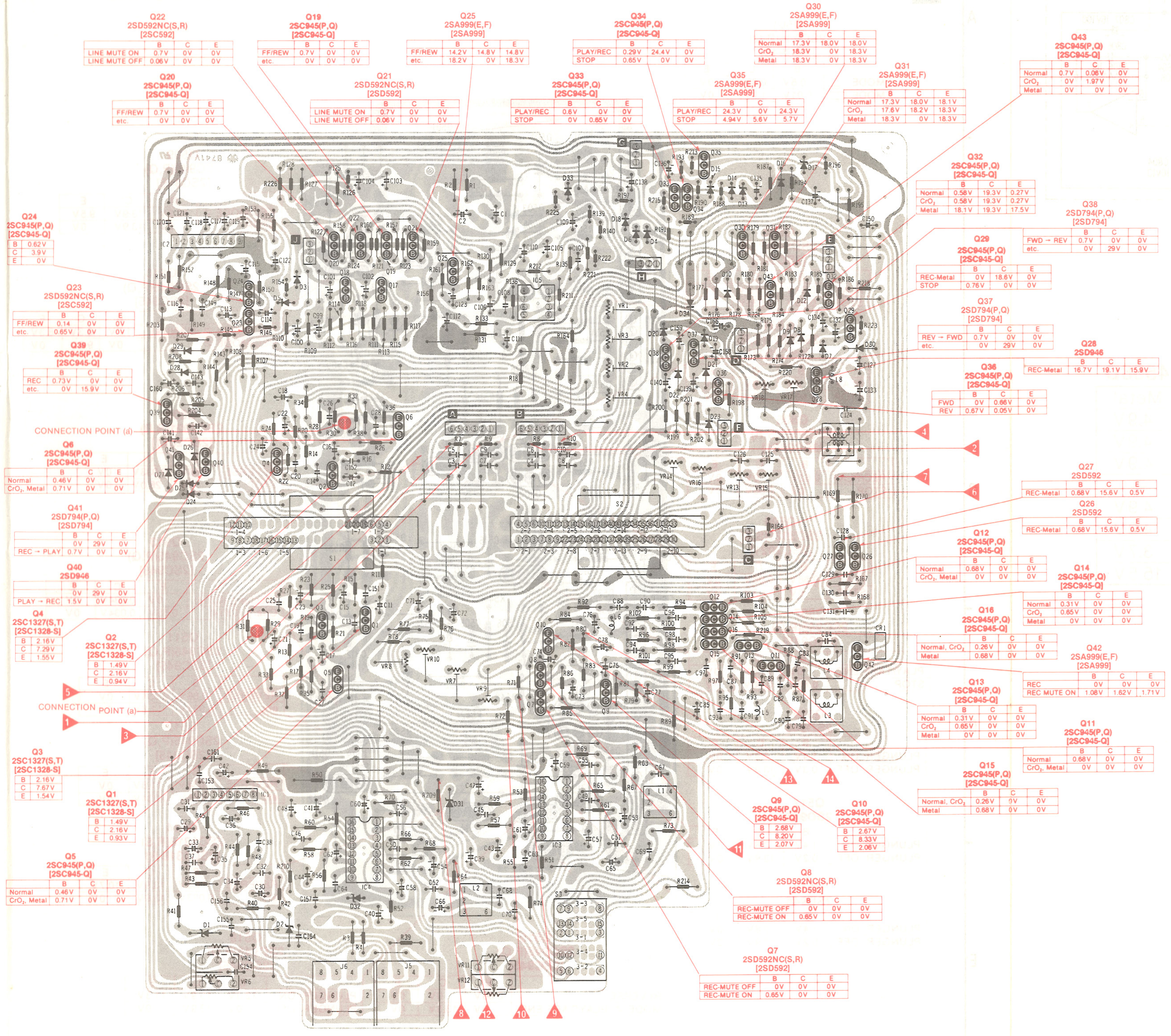
SPECIFICATIONS

* Input level controls ··· MAX
* Output level control ··· MAX

Playback S/N ratio Test tape ··· QZZCFM	Greater than 45 dB (without NAB filter)
Overall distortion Test tape ··· QZZCRA for Normal ··· QZZCRX for CrO2 ··· QZZCRZ for Metal	Less than 4%
Overall S/N ratio Test tape ··· QZZCRA	Greater than 43 dB (without NAB filter)

CIRCUIT BOARDS

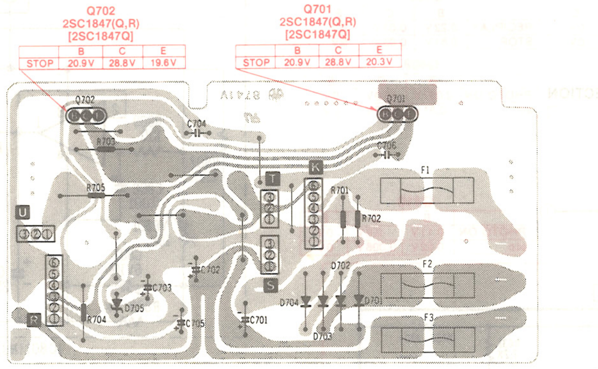
1 MAIN CIRCUIT BOARD


Q22 2SD592NC(S,R) [2SC592]
Q19 2SC945(P,Q) [2SC945-Q]
Q25 2SA999(E,F) [2SA999]
Q34 2SC945(P,Q) [2SC945-Q]
Q30 2SA999(E,F) [2SA999]
Q43 2SC945(P,Q) [2SC945-Q]
Q20 2SC945(P,Q) [2SC945-Q]
Q21 2SD592NC(S,R) [2SD592]
Q33 2SC945(P,Q) [2SC945-Q]
Q35 2SA999(E,F) [2SA999]
Q31 2SA999(E,F) [2SA999]
Q32 2SC945(P,Q) [2SC945-Q]
Q38 2SD794(P,Q) [2SD794]
Q24 2SC945(P,Q) [2SC945-Q]
Q23 2SD592NC(S,R) [2SC592]
Q29 2SC945(P,Q) [2SC945-Q]
Q37 2SD794(P,Q) [2SD794]
Q39 2SC945(P,Q) [2SC945-Q]
Q28 2SD946
Q36 2SC945(P,Q) [2SC945-Q]
CONNECTION POINT (a)
Q6 2SC945(P,Q) [2SC945-Q]
Q27 2SD592
Q26 2SD592
Q41 2SD794(P,Q) [2SD794]
Q12 2SC945(P,Q) [2SC945-Q]
Q40 2SD946
Q14 2SC945(P,Q) [2SC945-Q]
Q4 2SC1327(S,T) [2SC1328-S]
Q2 2SC1327(S,T) [2SC1328-S]
Q18 2SC945(P,Q) [2SC945-Q]
Q42 2SA999(E,F) [2SA999]
Q13 2SC945(P,Q) [2SC945-Q]
CONNECTION POINT (a)
Q11 2SC945(P,Q) [2SC945-Q]
Q3 2SC1327(S,T) [2SC1328-S]
Q15 2SC945(P,Q) [2SC945-Q]
Q1 2SC1327(S,T) [2SC1328-S]
Q9 2SC945(P,Q) [2SC945-Q]
Q10 2SC945(P,Q) [2SC945-Q]
Q5 2SC945(P,Q) [2SC945-Q]
Q8 2SD592NC(S,R) [2SD592]
Q7 2SD592NC(S,R) [2SD592]

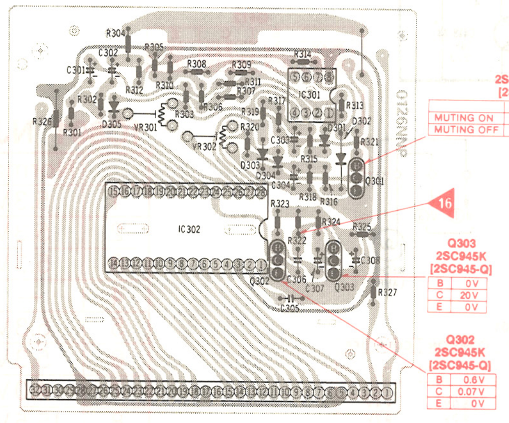
NOTES:
- The circuit shown in ▨ on the conductor is B+ (bias) circuit.
- The circuit shown in ▨ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicates in ☐ are DC voltage between the ground and electrical parts.
- All voltage values shown in circuitry are under no signal condition.
  Unless otherwise specified, voltage measurement conditions are that tape travel is at STOP, tape mode at NORMAL, and Dolby NR switch at OFF.

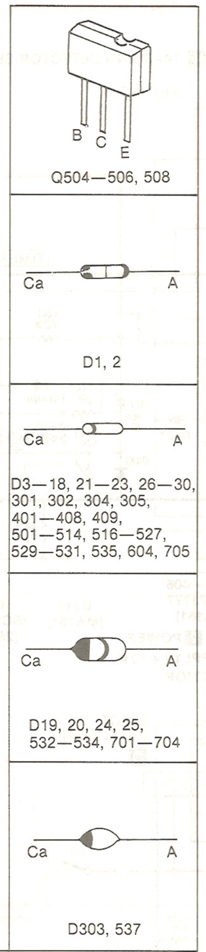
REC ....Voltage at record mode.
PLAY ....Voltage at playback mode.
REC/PLAY ....Voltage at record/playback mode.
Normal ....Voltage at Normal tape mode.
CrO_2..................Voltage at CrO_2 tape mode.
Metal ....Voltage at Metal tape mode.
FWD ....Voltage at Forward mode.
REV ....Voltage at Reverse mode.
REC-MUTE ....Voltage at record mode (Rec mute: ON).
FWD → REV ......Voltage at switching from FWD to REV modes.
REV → FWD ......Voltage at switching from REV to FWD modes.
MUTING ON ......Voltage at muting mode
(During power off muting circuit is operating).
MUTING OFF ......Voltage at non muting mode
(During power off muting circuit is not operating).
Voltages of Q302 and Q303 are taken when Q303 base is grounded.

2 POWER SUPPLY CIRCUIT BOARD

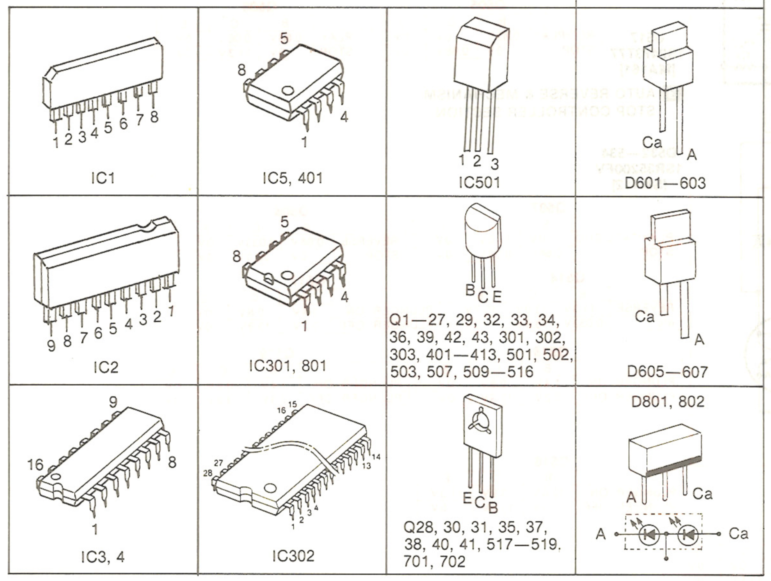

Q702 2SC1847(Q,R) [2SC1847Q]
Q701 2SC1847(Q,R) [2SC1847Q]
STOP

8 FL METER CIRCUIT BOARD


Q301 2SC945(P,Q) [2SC945-Q]
MUTING ON
MUTING OFF
Q303 2SC945K [2SC945-Q]
Q302 2SC945K [2SC945-Q]
IC302


B
C
E
Q504—506, 508
Ca
A
D1, 2
Ca
A
D3—18, 21—23, 26—30, 301, 302, 304, 305, 401—408, 409, 501—514, 516—527, 529—531, 535, 604, 705
Ca
A
D19, 20, 24, 25, 532—534, 701—704
Ca
A
D303, 537

TERMINATIONS


IC1
IC5, 401
IC501
D601—603
IC2
IC301, 801
Q1—27, 29, 32, 33, 34, 36, 39, 42, 43, 301, 302, 303, 401—413, 501, 502, 503, 507, 509—516
D605—607
IC3, 4
IC302
Q28, 30, 31, 35, 37, 38, 40, 41, 408, 409, 517—519, 701, 702
D801, 802
B
C
E
Ca
A

- Described in the circuit board diagram are two types of numbers; the supply parts number and production parts number for transistors. One type of number is used for supply parts number and production parts number when they are identical.

  e.g. Q1
  {2SB745(T,U)←Production parts number
  {[2SB745T]←Supply parts number
- **The supply parts number is described alone in the replacement parts list.**

- **This circuit board diagram may be modified at any time with the development of new technology.**

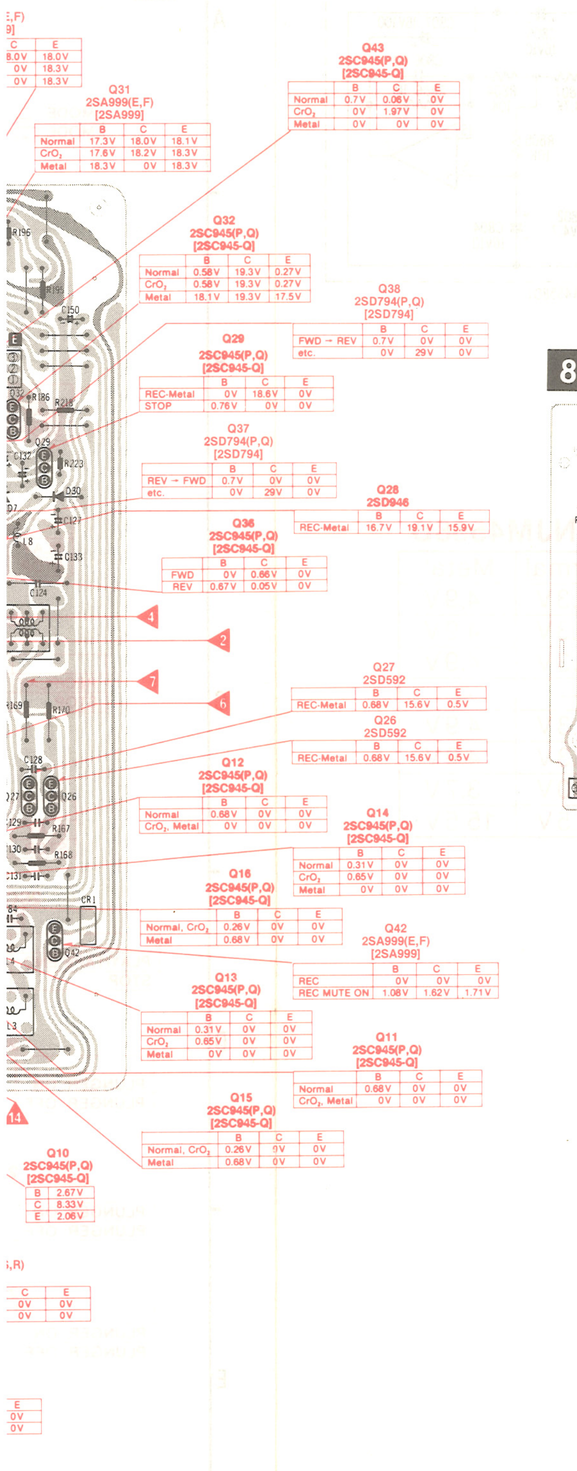
NOTES: RESISTORS
ERD...Carbon
ERG...Metal-oxide
ERS ...Metal-oxide
ERO...Metal-film
ERX...Metal-film
ERQ...Fuse type metallic
ERC...Solid
ERF...Cement

CAPACITORS
ECBA ......Cer
ECG☐......Cer
ECK☐......Cer
ECC☐......Cer
ECF☐......Cer
ECQM......Pol
ECQE ......Pol
ECQF ......Pol

REPLACEMENT PARTS LIST

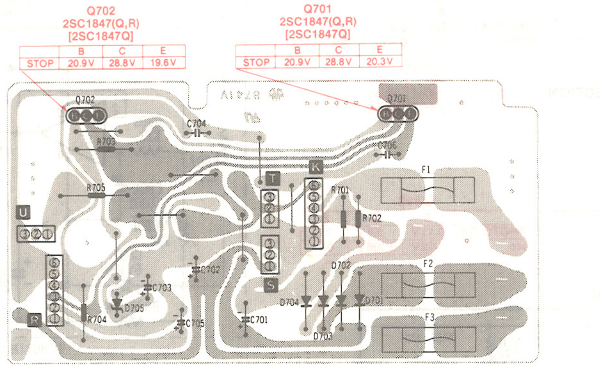
Important safety notice
Components identified by ⚠ mark have special charac
When replacing any of these components, use only ma

Ref. No.	Part No.	Ref. No.	Part No.
RESISTORS		R153	ERD25FJ471
R1, 2	ERD25TJ274	R154	ERD25FJ562
R3, 4	ERD25TJ273	R155	ERD25FJ222
R7, 8, 9, 10	ERD25FJ100	R156	ERD25FJ102
R11, 12	ERD25FJ181	R157, 158	ERD25FJ103
R13, 14	ERD25TSJ104	R159, 160	ERD25FJ102
R15, 16	ERD25FJ682	R161, 162	ERD25TJ273
R17, 18	ERD25FJ102	R163, 164	ERD25FJ103
R19, 20	ERD25FJ472	R166	ERD25FJ1R0
R21, 22	ERD25TJ104	R167, 168	ERD25TJ683
R23, 24	ERD25FJ821	R169, 170	ERD2FCG220
R25, 26	ERD25FJ470	R172	ERD25FJ681
R27, 28	ERD25TJ124	R173	ERD25FJ103
R29, 30	ERD25FJ472	R174	ERD25TJ223
R31, 32	ERD25TJ393	R175	ERD25TJ333
R33, 34	ERD25FJ472	R176, 177	ERD25FJ332
R35, 36	ERD25FJ562	R178	ERD25FJ152
R37, 38	ERD25TJ104	R179, 180	ERD25FJ103
R39, 40	ERD25FJ103	R181	ERD25FJ272
R41, 42	ERD25FJ101	R182, 183	ERD25FJ103
R43, 44	ERD25FJ680	R184	ERD25FJ152
R45, 46	ERD25TJ104	R185	ERD25TJ104
R47, 48	ERD25FJ562	R186	ERD25FJ681
R49	ERD25FJ102	R187	ERD25FJ561
R50	ERG1ANJ181	R188	ERD25TJ333
R51, 52, 53, 54, 55, 56	ERD25FJ102	R189	ERD25TJ224
R57, 58	ERO25CKG2003	R190	ERD25FJ471
R59, 60	ERD25TJ274	R191	ERD25FJ103
R61, 62	ERD25TJ105	R193	ERD25FJ102
R63, 64	ERD25FJ181	R194	ERD25FJ121
R65, 66	ERD25FJ332	R195	ERD25FJ122
R67, 68	ERD25TJ474	R196	ERD25TJ333
R69, 70	ERD25TJ473	R197	ERD25FJ103
R71, 72	ERD25FJ472	R198	ERD25TJ473
R73, 74	ERD25TJ274	R199, 200	ERD25FJ392
R75, 76	ERD25FJ392	R201, 202	ERD25FJ122
R77, 78	ERD25TJ563	R203	ERD25FJ152
R79, 80	ERD25TJ684	R204	ERD25FJ103
R81, 82	ERD25FJ272	R205	ERD25TJ473
R83, 84	ERD25FJ681	R206	ERD25FJ472
R85, 86	ERD25FJ102	R207	ERD25FJ222
R87, 88	ERD25FJ682	R208	ERD25TJ223
R89	ERD50FJ221	R209, 210	ERD25TJ105
R91, 92	ERD25FJ220	R211, 212, 213	ERD25FJ103
R93, 94	ERD25FJ331	R214	ERD25FJ152
R95, 96, 97, 98	ERD25FJ562	R215	ERD25FJ222
R99, 100	ERD25FJ152	R218, 219	ERD25FJ103
R101, 102	ERD25FJ272	R220	ERD25FJ102
R103, 104, 105	ERD25FJ103	R221, 222	ERD25FJ470
R107, 108	ERD25FJ472	R224	ERD25TJ333
R109, 110, 111, 112	ERD25TJ104	R225	ERD25FJ103
R113, 114	ERD25TJ223	R226	ERD25FJ102
R115, 116	ERD25FJ102	R228	ERD25FJ561
R117, 118	ERD25FJ331	R301, 302	ERD25TJ153
R119	ERD50FJ221	R303, 304	ERD25TJ104
R121, 122	ERD25FJ560	R305	ERD25TJ153
R123, 124	ERD25FJ471	R306	ERD25FJ220
R125, 126	ERD25FJ152	R307, 308, 309, 310	ERD25TJ223
R127, 128	ERD25TJ154	R311, 312	ERO25CKG2702
R129, 130, 131	ERD25TJ683	R313, 314	ERO25CKG1003
R133	ERD25TJ683	R315, 316	ERD25FJ331
R135, 136	ERD25TJ274	R317, 318	ERD25TJ224
R139, 140	ERD25FJ151	R319, 320	ERD25FJ102
R143, 144	ERD25TJ333	R321	ERD25FJ103
R145, 146	ERD25FJ103	R322, 323	ERD25TJ684
R147	ERD25TJ684	R324	ERD25FJ102
R148	ERD25FJ822	R325	ERD25FJ332
R149	ERD25FJ562	R326	ERD2FCQ181
R150	ERD25FJ682	R327	ERD25FJ103
R151	ERD25TJ154	R401	ERD25TJ473
R152	ERD25TJ273	R402	ERD25FJ562
		R403	ERD25TJ563
		R404	ERD25TJ473

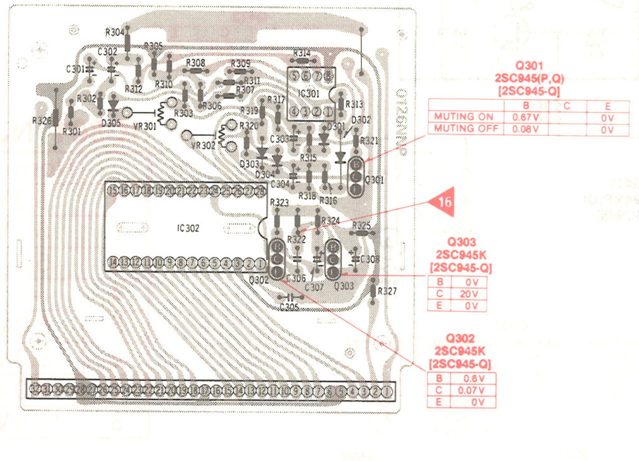

Q43 2SC945(P,Q) [2SC945-Q]
Q31 2SA999(E,F) [2SA999]
Q32 2SC945(P,Q) [2SC945-Q]
Q38 2SD794(P,Q) [2SD794]
Q29 2SC945(P,Q) [2SC945-Q]
Q37 2SD794(P,Q) [2SD794]
Q28 2SD946
Q36 2SC945(P,Q) [2SC945-Q]
Q27 2SD592
Q26 2SD592
Q12 2SC945(P,Q) [2SC945-Q]
Q14 2SC945(P,Q) [2SC945-Q]
Q16 2SC945(P,Q) [2SC945-Q]
Q42 2SA999(E,F) [2SA999]
Q13 2SC945(P,Q) [2SC945-Q]
Q11 2SC945(P,Q) [2SC945-Q]
Q15 2SC945(P,Q) [2SC945-Q]
Q10 2SC945(P,Q) [2SC945-Q]

ute: ON).
) to REV modes.
to FWD modes.
t is operating).
t is not operating).
base is grounded.

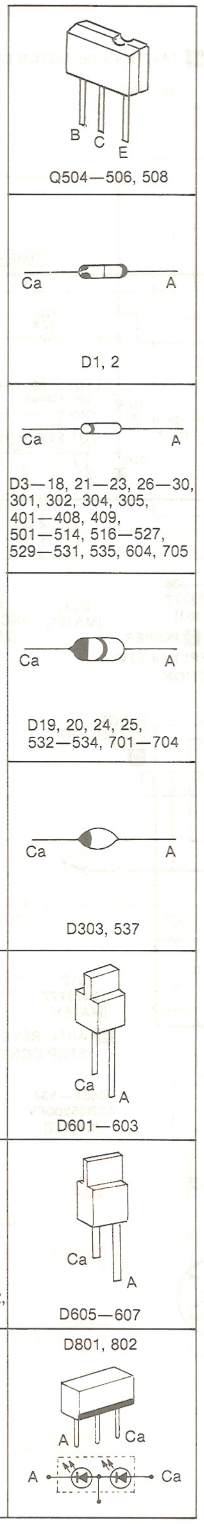
2 POWER SUPPLY CIRCUIT BOARD

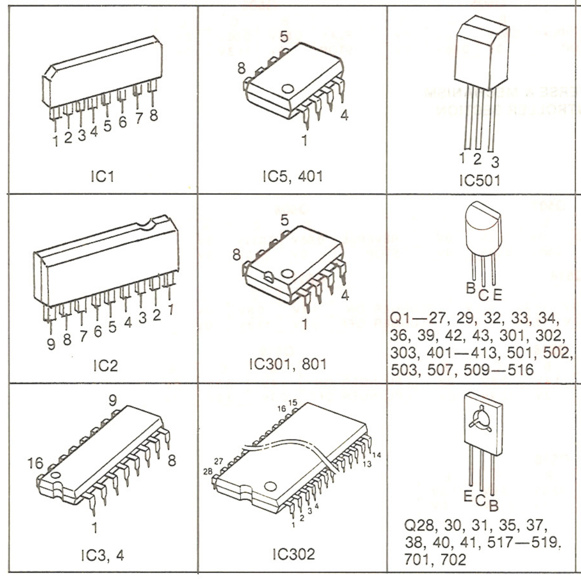


8 FL METER CIRCUIT BOARD



TERMINATIONS


B C E
Q504—506, 508
Ca A
D1, 2
Ca A
D3—18, 21—23, 26—30, 301, 302, 304, 305, 401—408, 409, 501—514, 516—527, 529—531, 535, 604, 705
Ca A
D19, 20, 24, 25, 532—534, 701—704
Ca A
D303, 537
Ca A
D601—603
Ca A
D605—607
D801, 802
A Ca
A Ca


1 2 3 4 5 6 7 8
IC1
8 5 4 1
IC5, 401
1 2 3
IC501
9 8 7 6 5 4 3 2 1
IC2
8 5 4 1
IC301, 801
B C E
Q1—27, 29, 32, 33, 34, 36, 39, 42, 43, 301, 302, 303, 401—413, 501, 502, 503, 507, 509—516
16 9 8 1
IC3, 4
IC302
E C B
Q28, 30, 31, 35, 37, 38, 40, 41, 517—519, 701, 702

- Described in the circuit board diagram are two types of numbers; the supply parts number and production parts number for transistors. One type of number is used for supply parts number and production parts number when they are identical.

  e.g. Q1
  (2SB745(T,U)←—Production parts number
  ([2SB745T]←——Supply parts number
- **The supply parts number is described alone in the replacement parts list.**
- **This circuit board diagram may be modified at any time with the development of new technology.**

NOTES: RESISTORS
ERD…Carbon
ERG…Metal-oxide
ERS…Metal-oxide
ERO…Metal-film
ERX…Metal-film
ERQ…Fuse type metallic
ERC…Solid
ERF…Cement

CAPACITORS
ECBA ……Ceramic
ECG□……Ceramic
ECK□……Ceramic
ECC□……Ceramic
ECF□……Ceramic
ECQM……Polyester film
ECQE ……Polyester film
ECQF ……Polypropylene
ECE□ ……Electrolytic
ECE□N …Non polar electrolytic
ECQS ……Polystyrene
ECS□ ……Tantalum
QCS ……Tantalum

REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.
RESISTORS	
R1, 2	ERD25TJ274
R3, 4	ERD25TJ273
R7, 8, 9, 10	ERD25FJ100
R11, 12	ERD25FJ181
R13, 14	ERD25TSJ104
R15, 16	ERD25FJ682
R17, 18	ERD25FJ102
R19, 20	ERD25FJ472
R21, 22	ERD25TJ104
R23, 24	ERD25FJ821
R25, 26	ERD25FJ470
R27, 28	ERD25TJ124
R29, 30	ERD25FJ472
R31, 32	ERD25TJ393
R33, 34	ERD25FJ472
R35, 36	ERD25FJ562
R37, 38	ERD25TJ104
R39, 40	ERD25FJ103
R41, 42	ERD25FJ101
R43, 44	ERD25FJ680
R45, 46	ERD25TJ104
R47, 48	ERD25FJ562
R49	ERD25FJ102
R50	ERG1ANJ181
R51, 52, 53, 54, 55, 56	ERD25FJ102
R57, 58	ERO25CKG2003
R59, 60	ERD25TJ274
R61, 62	ERD25TJ105
R63, 64	ERD25FJ181
R65, 66	ERD25FJ332
R67, 68	ERD25TJ474
R69, 70	ERD25TJ473
R71, 72	ERD25FJ472
R73, 74	ERD25TJ274
R75, 76	ERD25FJ392
R77, 78	ERD25TJ563
R79, 80	ERD25TJ684
R81, 82	ERD25FJ272
R83, 84	ERD25FJ681
R85, 86	ERD25FJ102
R87, 88	ERD25FJ682
R89	ERD50FJ221
R91, 92	ERD25FJ220
R93, 94	ERD25FJ331
R95, 96, 97, 98	ERD25FJ562
R99, 100	ERD25FJ152
R101, 102	ERD25FJ272
R103, 104, 105	ERD25FJ103
R107, 108	ERD25FJ472
R109, 110, 111, 112	ERD25TJ104
R113, 114	ERD25TJ223
R115, 116	ERD25FJ102
R117, 118	ERD25FJ331
R119	ERD50FJ221
R121, 122	ERD25FJ560
R123, 124	ERD25FJ471
R125, 126	ERD25FJ152
R127, 128	ERD25TJ154
R129, 130, 131	ERD25TJ683
R133	ERD25TJ683
R135, 136	ERD25TJ274
R139, 140	ERD25FJ151
R143, 144	ERD25TJ333
R145, 146	ERD25FJ103
R147	ERD25TJ684
R148	ERD25FJ822
R149	ERD25FJ562
R150	ERD25FJ682
R151	ERD25TJ154
R152	ERD25TJ273

Ref. No.	Part No.
R153	ERD25FJ471
R154	ERD25FJ562
R155	ERD25FJ222
R156	ERD25FJ102
R157, 158	ERD25FJ103
R159, 160	ERD25FJ102
R161, 162	ERD25TJ273
R163, 164	ERD25FJ103
R166	ERD25FJ1R0
R167, 168	ERD25TJ683
R169, 170	ERD2FCG220
R172	ERD25FJ681
R173	ERD25FJ103
R174	ERD25TJ223
R175	ERD25TJ333
R176, 177	ERD25FJ332
R178	ERD25FJ152
R179, 180	ERD25FJ103
R181	ERD25FJ272
R182, 183	ERD25FJ103
R184	ERD25FJ152
R185	ERD25TJ104
R186	ERD25FJ681
R187	ERD25FJ561
R188	ERD25TJ333
R189	ERD25TJ224
R190	ERD25FJ471
R191	ERD25FJ103
R193	ERD25FJ102
R194	ERD25FJ121
R195	ERD25FJ122
R196	ERD25TJ333
R197	ERD25FJ103
R198	ERD25TJ473
R199, 200	ERD25FJ392
R201, 202	ERD25FJ122
R203	ERD25FJ152
R204	ERD25FJ103
R205	ERD25TJ473
R206	ERD25FJ472
R207	ERD25FJ222
R208	ERD25TJ223
R209, 210	ERD25TJ105
R211, 212, 213	ERD25FJ103
R214	ERD25FJ152
R215	ERD25FJ222
R218, 219	ERD25FJ103
R220	ERD25FJ102
R221, 222	ERD25FJ470
R224	ERD25TJ333
R225	ERD25FJ103
R226	ERD25FJ102
R228	ERD25FJ561
R301, 302	ERD25TJ153
R303, 304	ERD25TJ104
R305	ERD25TJ153
R306	ERD25FJ220
R307, 308, 309, 310	ERD25TJ223
R311, 312	ERO25CKG2702
R313, 314	ERO25CKG1003
R315, 316	ERD25FJ331
R317, 318	ERD25TJ224
R319, 320	ERD25FJ102
R321	ERD25FJ103
R322, 323	ERD25TJ684
R324	ERD25FJ102
R325	ERD25FJ332
R326	ERD2FCQ181
R327	ERD25FJ103
R401	ERD25TJ473
R402	ERD25FJ562
R403	ERD25TJ563
R404	ERD25TJ473

Ref. No.	Part No.
R405	ERD25FJ562
R406	ERD25TJ473
R407	ERD25TJ683
R408	ERD25FJ103
R409	ERD50FJ122
R414	ERD25FJ821
R416	ERD25FJ332
R417	ERD25FJ103
R418	ERD25TJ473
R419	ERD25FJ222
R420	ERD25FJ682
R421, 422	ERD25TJ473
R431	ERD25FJ222
R432	ERD25FJ471
R433, 435	ERD25TJ223
R438	ERD25FJ472
R441	ERD25TJ824
R442	ERD25FJ103
R443, 444	ERD25TJ473
R445	ERD25TJ683
R446	ERD25TJ123
R447	ERD2FCG220P
R501, 502, 503, 504, 505	ERD25FJ562
R506, 507	ERD25TJ473
R509	ERD25TJ223
R510, 511	ERD25TJ473
R512	ERD25FJ562
R513, 514	ERD25TJ104
R515	ERD25TJ473
R516	ERD25FJ221
R517, 518	ERD25TJ473
R519	ERD25FJ222
R520	ERD25FJ101
R521	ERD25TJ223
R522	ERD25TJ473
R523	ERD25FJ222
R524, 525, 526, 527, 528	ERD25TJ473
R529	ERD25TJ123
R530	ERD25TJ473
R531	ERD25FJ471
R532	ERD25TJ123
R533	ERD25TJ473
R534	ERD25TJ123
R535	ERD25TJ473
R536, 537	ERD25TJ123
R538	ERD25FJ332
R539, 540	ERD25TJ333
R541	ERD25FJ332
R542	ERD25TJ473
R543	ERD25TJ334
R544, 545	ERD25TJ473
R546	ERD25TJ333
R547, 548	ERD25TJ473
R549	ERD25FJ103
R550, 551, 552	ERD25TJ223
R553	ERD25TJ473
R554	ERD25FJ562
R555	ERD25FJ222
R556	ERD25TJ123
R557, 558	ERD25TJ473
R559	ERD25TJ683
R601	ERD25FJ332
R602	ERD25FJ222
R603	ERD25FJ152
R701, 702	ERD2FCG181
R703 ⚠	ERD25FJ821
R704 ⚠	ERQ12AJ100
R705 ⚠	ERG1ANJ271
R802	ERD25FJ222
R803	ERD25FJ102
R804, 805	ERD25FJ103
R806	ERD25TJ105
R807	ERD25FJ472
R809	ERD25FJ101

Ref. No.	Part No.
VARIABLE RESISTORS	
VR1, 2, 3, 4	EVNM4AA00B54
VR5, 6	EWJ5SAF22A24
VR7, 8, 9, 10	EVNM4AA00B24
VR11, 12	QWKEPAF15A14
VR13, 14, 15, 16	EVNM4AA00B54
VR17, 18	EVNM4AA00B55
VR301	EVNM4AA00B52
VR302	EVNM4AA00B14
VR801	EVNM4AA00B14
CAPACITORS	
C1, 2	ECEA1HS100
C3, 4	ECKD1H681KB
C5, 6	ECCD1H271KB
C7, 8	ECKD1H681KB
C9, 10	ECCD1H271KB
C11, 12	ECEA16M10R
C13, 14	ECKD1H102KB
C15, 16	ECEA1CS330
C17, 18	ECEA1HS101
C19, 20	ECCD1H470KC
C21, 22	ECEA1HS100
C23, 24	ECEA1CS330
C25, 26	ECQV05273JZ
C27, 28	ECQM1H123JZ
C29, 30	ECEA50M4R7
C31, 32	ECQM1H103JZ
C33, 34	ECEA1AS101
C35, 36	ECEA50ZR47
C37, 38	ECQM1H152JZ
C39, 40	ECEA50MR33R
C41	ECEA1CS331
C42	ECEA1HS101
C43, 44	ECEA1AS221
C45, 46	ECQV05104JZ
C47, 48	ECEA50ZR33
C49, 50	ECQV05273JZ
C51, 52	ECQM1H562JZ
C53, 54	ECEA1HS100
C55, 56	ECQM1H472JZ
C57, 58, 59, 60	ECEA25Z4R7
C61, 62	ECEA1HS100
C63, 64	ECQM1H473JZ
C65, 66	ECEA1HS100
C67, 68	ECCD1H560KC
C69, 70	ECQP1392JZ
C71, 72, 73, 74	ECEA50ZR68
C75, 76	ECEA1CS330
C77, 78	ECEA50ZR68
C79, 80, 81, 82	ECKD1H152KB
C83, 84	ECQP1391JZ
C85	ECEA1ES101
C87, 88	ECQM1H333JZ
C89, 90	ECQM1H123JZ
C91, 92	ECQM1H273JZ
C93, 94	ECQM1H333JZ
C95, 96	ECQM1H393JZ
C97, 98	ECQM1H333JZ
C99, 100, 101, 102	ECEA25Z4R7
C103, 104	ECEA1HS100
C105, 106	ECEA50Z1
C107, 108	ECCD1H100KC
C109, 110	ECEA1ES101
C111	ECEA50Z1
C112	ECEA1ES331
C113	ECQM1H123JZ
C114	ECEA1HS100
C115	ECEA25Z4R7
C116	ECQM1H103JZ

Ref. No.	Part No.
C117	ECEA1HS100
C118	ECEA50ZR22
C119	ECEA25Z4R7
C120	ECEA50Z1
C121	ECEA50Z3R3
C122	ECEA1HS470
C123	ECEA50Z2R2
C124	ECQF4153KZ
C125, 126	ECKD1H181KB
C127	ECEA50Z2R2
C128, 129	ECQM1H682JZ
C130, 131	ECQM1H222JZ
C132	ECEA50Z1
C133	ECEA50Z2R2
C134	ECEA1HS100
C135	ECEA1JS220
C136	ECEA50Z1
C137	ECEA1VS471
C138	ECEA1HS100
C139, 140, 141	ECEA1HS101
C142, 143	ECEA1HS100
C149	ECQM1H562JZ
C150	ECEA50Z1
C151, 152, 153, 154	ECCD1H330K
C155, 156	ECKD1H102KB
C157	ECCD1H330K
C158, 159	ECEA1CS330
C160	ECEA25Z4R7
C161	ECCD1H181K
C164, 165	ECCD1H330K
C166	ECEA1HS100
C167, 168	ECQM1H222JZ
C301, 302	ECEA50ZR22
C303, 304	ECCD50Z3R3
C305	ECQM1H473JZ
C306	ECQV05104JZ
C307	ECEA25Z4R7
C308	ECEA1HS100
C401	ECEA1ES470
C402	ECEA1ES220
C408	ECQV05104JZ
C410	ECEA50ZR22
C411	ECKD1H223ZF
C413	ECKD1H104ZF
C415, 416	ECEA25Z4R7
C417	ECEA1HS100
C418	ECEA16M22RK
C501	ECEA1ES220
C502, 503	ECEA1HS100
C504	ECEA1EN4R7
C505	ECEA1HN010
C506	ECEA1HN2R2
C507	ECKD1H223ZF
C508	ECEA50ZR1
C509	ECEA50Z2R2
C510	ECEA25Z4R7
C511	ECKD1H103ZF
C512	ECKD1H222KB
C513	ECEA1CS330
C514	ECEA50Z3R3
C515	ECEA1HS100
C516	ECKD1H223ZF
C518	ECQV05104JZ
C519, 520	ECKD1H223ZF
C521	ECQV05104JZ
C701 ⚠	ECEA1VS222
C702 ⚠	ECEA1HS102
C703 ⚠	ECEA1ES331
C704 ⚠	ECKD1H223ZF
C705 ⚠	ECEA1ES331
C706 ⚠	ECKD1H223ZF
C801	ECEA0JS101
C802	ECEA25Z4R7
C804, 805	ECEA1HS100

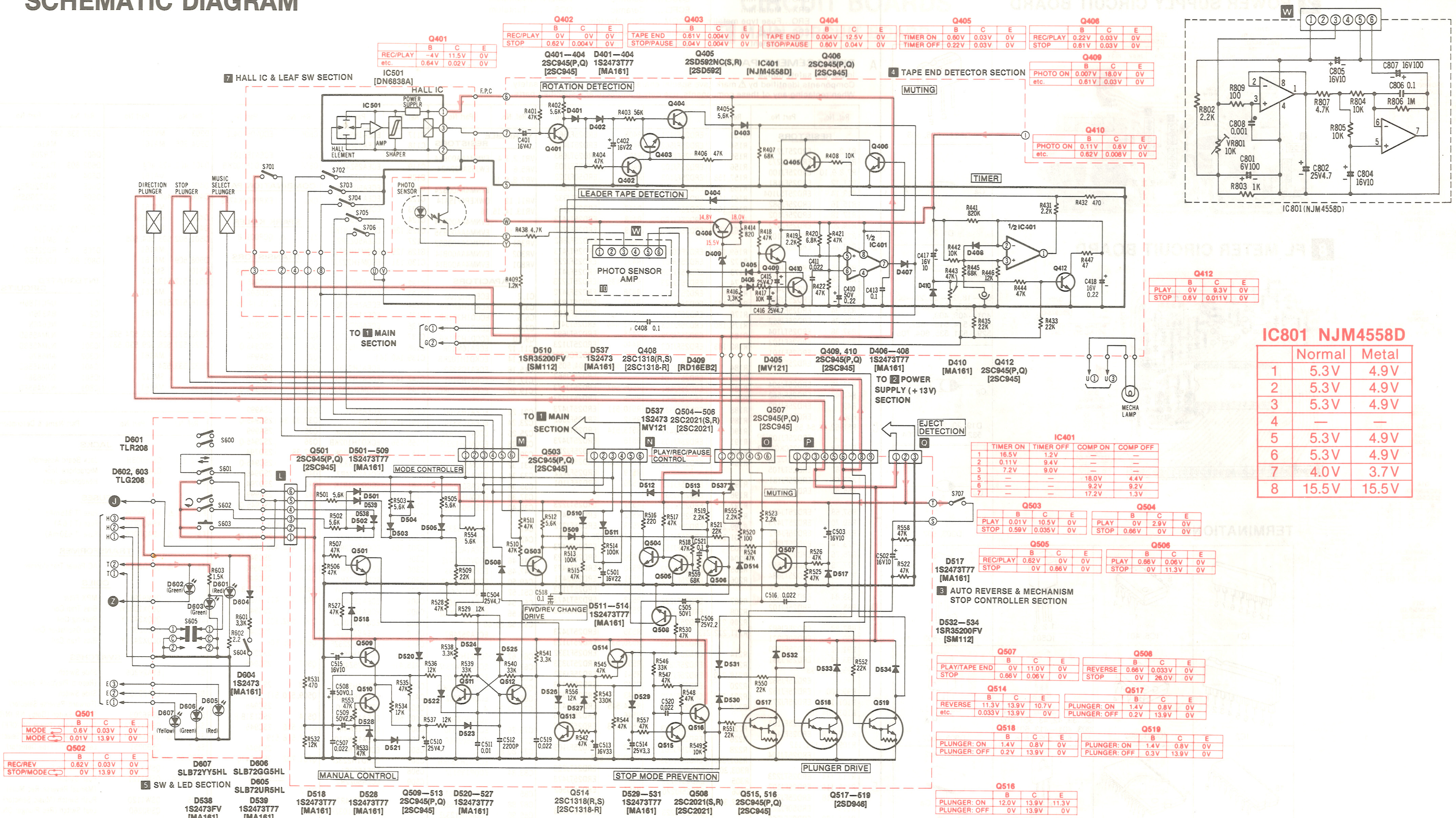
Ref. No.	Part No.
C806	ECQV05104JZ
C807	ECEA1ES101
C808	ECKD1H102KB
COMBINATION PART	
CR1	EXRP102K473S
SPARK KILLER	
Z1 ⚠	QCR0011B
TRANSISTORS	
Q1, 2, 3, 4	2SC1328-S
Q5, 6	2SC945-Q
Q7, 8	2SD592
Q9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20	2SC945-Q
Q21, 22, 23	2SD592
Q24	2SC945-Q
Q25	2SA999
Q26, 27	2SD592
Q28	2SD946
Q29	2SC945-Q
Q30, 31	2SA999
Q32, 33, 34	2SC945-Q
Q35	2SA999
Q36	2SC945-Q
Q37, 38	2SD794
Q39	2SC945-Q
Q40	2SD946
Q41	2SD794
Q42	2SA999
Q43	2SC945-Q
Q301, 302, 303	2SC945-Q
Q401, 402, 403, 404	2SC945
Q405	2SD592
Q406	2SC945
Q408	2SC1318-R
Q409, 410, 411, 412	2SC945
Q501, 502, 503	2SC945
Q504, 505, 506	2SC2021
Q507	2SC945
Q508	2SC2021
Q509, 510, 511, 512, 513	2SC945
Q514	2SC1318-R
Q515, 516	2SC945
Q517, 518, 519	2SD946
Q701, 702	2SC1847Q
DIODES	
D1, 2	RD6R8EB2
D3, 4	SM112
D5	MA161
D6	SM112
D7, 8, 9, 10	MA161
D12	MA161
D13	RD24EB4
D14, 15, 16	MA161
D17	RD24EB4
D18, 19, 20	SM112
D21, 22, 23	MA161
D24, 25	SM112
D26, 27, 28, 29, 30	MA161
D31	RD6R8EB2
D32	RVDRD6R8EB
D33	MA161
D34	SM112
D301, 302	MA161

Ref. No.	Part No.
D303	MV121
D304, 305	MA161
D401, 402, 403, 404	MA161
D405	MV121
D406, 407, 408	MA161
D409	RD16EB2
D410	MA161
D501, 502, 503, 504, 505	MA161
D508, 509	MA161
D510	SM112
D511, 512, 513, 514	MA161
D516, 517, 518	MA161
D520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531	MA161
D532, 533, 534	SM112
D535	MA161

Ref. No.	Part No.
D537, 538, 539	MA161
D601	TLR208
D602, 603	TLG208
D604	MA161
D605	SLB72UR5HL
D606	SLB72GG5HL
D607	SLB72YY5HL
D701, 702, 703, 704 ⚠	SM112
D705 ⚠	RD22EB2
D801, 802	LD001GG
INTEGRATED CIRCUITS	
IC1	UPC1186H
IC2	BA336N
IC3, 4	NE646N
IC5	NJM4556D
IC301	NJM4558D
IC302	AN6870
IC401	NJM4558D
IC501	DN6838A
IC801	NJM4558D

Ref. No.	Part No.	Part Name & Description
	JACKS	
J1, 2, 3, 4	QEJ5003H	Jack Board Assembly
J5, 6	QJA0262	Microphone Jack
J7	QJA0259	Headphones Jack
	FUSES	
F1 ⚠	XBAQ0006	Fuse (T 315mA)
F2 ⚠	XBAQ0010	Fuse (T 1.6A)
F3 ⚠	XBAQ0008	Fuse (T 630mA)
	TRANSFORMER	
T1 ⚠	QLPD67EME	AC Power Transformer
	COILS	
L1, 2	QLM9Z9K	MPX Filter
L3, 4	QLQX1032W	Bias Trap Coil
L5, 6	QLQX2421Y	Peaking Coil
L7	QLB0202	Bias Oscillation Coil
L8	QLQX2421Y	Bias Trap Coil
	SWITCHES	
S1	ESA29306	Slide Switch (Record/Playback Selector)
S2	ESA29306	Slide Switch (Forward/Reverse Selector)
S3	QSR6203	Rotary Switch (Dolby NR IN/OUT)
S4 ⚠	QSW1117AS	Push Switch (Power ON/OFF)
S5 ⚠	QSR1407H	Rotary Switch (Voltage Selector)
S6, 7	QSB0251	Leaf Switch (Tape Detector)
S600, 601 and 602	QSWX311	Combination Switch (Mode Selector)
S603, 604	QSW1121	Push Switch (Manual Reverse/Rec Mute)
S605	QSW1120	Push Switch (Music Selector)
S701	QSB0260	Leaf Switch (Rec Plunger ON/OFF)
S702	QSB0261	Leaf Switch (Reverse Rec Protect)
S703	QSB0260	Leaf Switch (Forward/Reverse Selector)
S704	QSB0260	Leaf Switch (Fast Forward/Rewind Mode Switch)
S705	QSB0195	Leaf Switch (Pause Mode Switch)
S706	QSB0194	Leaf Switch (Playback Mode Switch)
S707	QSB0178i	Leaf Switch (Eject Detection)

SCHEMATIC DIAGRAM


10 PHOTO SENSOR AMP SECTION
IC801 (NJM4558D)
7 HALL IC & LEAF SW SECTION
IC501 [DN6838A]
HALL IC
ROTATION DETECTION
LEADER TAPE DETECTION
PHOTO SENSOR AMP
4 TAPE END DETECTOR SECTION
MUTING
TIMER
Q401—404 2SC945(P,Q) [2SC945]
D401—404 1S2473T77 [MA161]
Q405 2SD592NC(S,R) [2SD592]
IC401 [NJM4558D]
Q406 2SC945(P,Q) [2SC945]
TO 1 MAIN SECTION
D510 1SR35200FV [SM112]
D537 1S2473 [MA161]
Q408 2SC1318(R,S) [2SC1318-R]
D409 [RD16EB2]
D405 [MV121]
Q409, 410 2SC945(P,Q) [2SC945]
D406—408 1S2473T77 [MA161]
D410 [MA161]
Q412 2SC945(P,Q) [2SC945]
TO 2 POWER SUPPLY (+13V) SECTION
MECHA LAMP
EJECT DETECTION
MODE CONTROLLER
PLAY/REC/PAUSE CONTROL
FWD/REV CHANGE DRIVE
MANUAL CONTROL
STOP MODE PREVENTION
PLUNGER DRIVE
3 AUTO REVERSE & MECHANISM STOP CONTROLLER SECTION
5 SW & LED SECTION
D601 TLR208
D602, 603 TLG208
D604 1S2473 [MA161]
D607 SLB72YY5HL
D606 SLB72GG5HL
D605 SLB72UR5HL
D538 1S2473FV [MA161]
D539 1S2473T77 [MA161]
D518 1S2473T77 [MA161]
D528 1S2473T77 [MA161]
Q509—513 2SC945(P,Q) [2SC945]
D520—527 1S2473T77 [MA161]
Q514 2SC1318(R,S) [2SC1318-R]
D529—531 1S2473T77 [MA161]
Q508 2SC2021(S,R) [2SC2021]
Q515, 516 2SC945(P,Q) [2SC945]
Q517—519 [2SD946]
D517 1S2473T77 [MA161]
D532—534 1SR35200FV [SM112]
Q501 2SC945(P,Q) [2SC945]
D501—509 1S2473T77 [MA161]
Q503 2SC945(P,Q) [2SC945]
D537 1S2473 MV121
Q504—506 2SC2021(S,R) [2SC2021]
Q507 2SC945(P,Q) [2SC945]
DIRECTION PLUNGER
STOP PLUNGER
MUSIC SELECT PLUNGER
PHOTO SENSOR

Q401

	B	C	E
REC/PLAY	−4V	11.5V	0V
etc.	0.64V	0.02V	0V

Q402

	B	C	E
REC/PLAY	0V	0V	0V
STOP	0.62V	0.004V	0V

Q403

	B	C	E
TAPE END	0.61V	0.004V	0V
STOP/PAUSE	0.04V	0.004V	0V

Q404

	B	C	E
TAPE END	0.004V	12.5V	0V
STOP/PAUSE	0.60V	0.04V	0V

Q405

	B	C	E
TIMER ON	0.60V	0.03V	0V
TIMER OFF	0.22V	0.03V	0V

Q406

	B	C	E
REC/PLAY	0.22V	0.03V	0V
STOP	0.61V	0.03V	0V

Q409

	B	C	E
PHOTO ON	0.007V	18.0V	0V
etc.	0.61V	0.03V	0V

Q410

	B	C	E
PHOTO ON	0.11V	0.6V	0V
etc.	0.62V	0.008V	0V

Q412

	B	C	E
PLAY	0V	9.3V	0V
STOP	0.6V	0.011V	0V

IC801 NJM4558D

	Normal	Metal
1	5.3V	4.9V
2	5.3V	4.9V
3	5.3V	4.9V
4	—	—
5	5.3V	4.9V
6	5.3V	4.9V
7	4.0V	3.7V
8	15.5V	15.5V

IC401

	TIMER ON	TIMER OFF	COMP ON	COMP OFF
1	16.5V	1.2V	—	—
2	0.11V	9.4V	—	—
3	7.2V	9.0V	—	—
5	—	—	18.0V	4.4V
6	—	—	9.2V	9.2V
7	—	—	17.2V	1.3V

Q503

	B	C	E
PLAY	0.01V	10.5V	0V
STOP	0.59V	0.035V	0V

Q504

	B	C	E
PLAY	0V	2.9V	0V
STOP	0.66V	0V	0V

Q505

	B	C	E
REC/PLAY	0.62V	0V	0V
STOP	0V	0.66V	0V

Q506

	B	C	E
PLAY	0.66V	0.06V	0V
STOP	0V	11.3V	0V

Q507

	B	C	E
PLAY/TAPE END	0V	11.0V	0V
STOP	0.66V	0.06V	0V

Q508

	B	C	E
REVERSE	0.66V	0.033V	0V
STOP	0V	26.0V	0V

Q514

	B	C	E
REVERSE	11.3V	13.9V	10.7V
etc.	0.033V	13.9V	0V

Q517

	B	C	E
PLUNGER: ON	1.4V	0.8V	0V
PLUNGER: OFF	0.2V	13.9V	0V

Q518

	B	C	E
PLUNGER: ON	1.4V	0.8V	0V
PLUNGER: OFF	0.2V	13.9V	0V

Q519

	B	C	E
PLUNGER: ON	1.4V	0.8V	0V
PLUNGER: OFF	0.3V	13.9V	0V

Q516

	B	C	E
PLUNGER: ON	12.0V	13.9V	11.3V
PLUNGER: OFF	0V	13.9V	0V

Q501

	B	C	E
MODE ⤸	0.6V	0.03V	0V
MODE ⟲	0.01V	13.9V	0V

Q502

	B	C	E
REC/REV	0.62V	0.03V	0V
STOP/MODE ⟲	0V	13.9V	0V

Q509

	B	C	E
REC/MODE ⇄	10.2V	13.9V	9.5V
STOP	0V	13.9V	0V

Q510

	B	C	E
REC/MODE ⇄ /MANUAL	1.7V	8.3V	8.3V
REC/MODE ⇄	0V	9.6V	0V

Q511

	B	C	E
REVERSE	0.66V	0.034V	0V
etc.	0.034V	11.8V	0V

Q512

	B	C	E
REVERSE	0.034V	11.8V	0V
etc.	0.65V	0.034V	0V

Q513

	B	C	E
Discharge (C514)	0V	0.034V	0V
Charge (C514)	0.65V	0.034V	0V

Q515

	B	C	E
REVERSE	0.66V	0V	0V
⇄ PLAY TAPE END	0V	13.5V	0V

NOTES:

- S600 ......Mode SW (⟲) (shown in OFF position).
- S601 ......Mode SW (⇄) (shown in OFF position).
- S602 ......Mode SW (⤸) (shown in OFF position).
- S603 ......Manual Reverse SW (shown in OFF position).
- S604 ......Rec Mute SW (shown in OFF position).
- S605 ......Music select SW (shown in OFF position).
- S701 ......Rec plunger ON/OFF SW (shown in OFF position).
- S702 ......Reverse rec protect SW (shown in OFF position).
- S703 ......FWD/REV direction SW (shown in OFF position).
- S704 ......FF/REW mode SW (shown in OFF position).
- S705 ......Pause mode SW (shown in OFF position).
- S706 ......Play mode SW (shown in OFF position).
- S707 ......Eject detection SW (shown in OFF position).

- Resistance are in ohms (Ω) 1/4 watt unless specified otherwise.
  1K = 1,000Ω, M = 1,000 KΩ.
- Capacity are in micro-farads (μF) unless specified otherwise.
  P = Pico-farads
- The mark (▼) shows test paint e.g. ▼ = Test point 1.
- (➡) indicates B + (bias).
- Values indicated in ☐ are DC voltage between the chassis and electrical parts.
- All voltage valuse shown in circuitry are under no signal condition.
  Unless otherwise specified, voltage measurement conditions are that tape travel is at STOP, the mode at NORMAL, and Dolby NR switch at OFF.

STOP..............................Voltage at stop mode.
PLAY/REC ....Voltage at playback/record mode.

STOP/PAUSE ....Voltage at stop/pause mode.
TAPE END ....Voltage at tape end mode.
MODE ⟲ ....Voltage at mode ⟲ (S600: ON).
MODE ⤸ ....Voltage at mode ⤸ (S602: ON).
TIMER ON ....Voltage when a high level output is given from the timer circuit.
PHOTO ON ....Voltage during photo sensing
REC/MODE ⇄ /MANUAL.........Voltage when operation is switched to manual during recording in Mode ⇄ (S601: ON).
PLAY/TAPE END ....Voltage when the end of tape is playback.
MODE ⇄ /PLAY/TAPE END......Voltage when the end of tape is playback in Mode ⇄ (S601: ON).
REVERSE ....Voltage when tape travel is reversed.

- Described in the circuit board diagram are two types of numbers; the supply parts number and production parts number for transistors. One type of number is used for supply parts number and production parts number when they are identical.

  e.g. Q1
  {2SB745(T,U)◄—Production parts number
  {[2SB745]◄——Supply parts number
- **The supply parts number is described alone in the replacement parts list.**

- **This schematic diagram may be modified at any time with the development of new technology.**

CIRCUIT BOARDS

3 AUTO-REVERSE AND MECHANISM STOP CONTROLLER CIRCUIT BOARD

Q501
2SC945(P,Q)
[2SC945]

	B	C	E
MODE ⊃	0.6 V	0.03 V	0 V
MODE ⊂⊃	0.01 V	13.9 V	0 V

Q503
2SC945(P,Q)
[2SC945]

	B	C	E
PLAY	0.01 V	10.5 V	0 V
STOP	0.59 V	0.035 V	0 V

Q504
2SC2021(S,R)
[2SC2021]

	B	C	E
PLAY	0 V	2.9 V	0 V
STOP	0.66 V	0 V	0 V

Q505
2SC2021(S,R)
[2SC2021]

	B	C	E
REC/PLAY	0.62 V	0 V	0 V
STOP	0 V	0.66 V	0 V

Q506
2SC2021(S,R)
[2SC2021]

	B	C	E
PLAY	0.66 V	0.06 V	0 V
STOP	0 V	11.3 V	0 V

Q507
2SC945(P,Q)
[2SC945]

	B	C	E
PLAY/TAPE END	0 V	11.0 V	0 V
STOP	0.66 V	0.06 V	0 V

Q519
2SD946

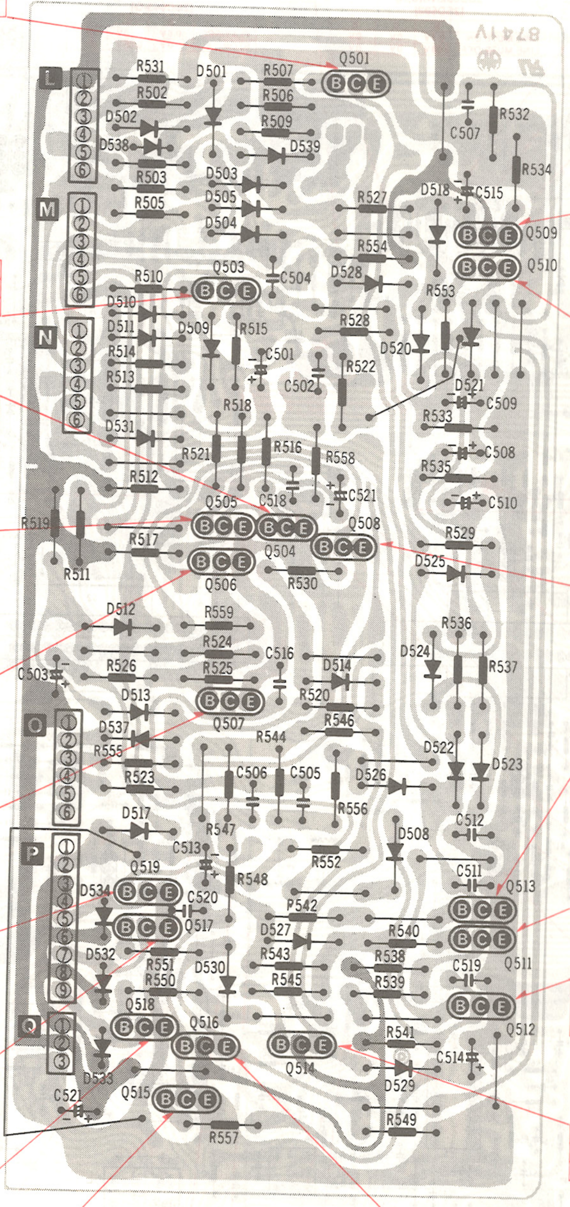
	B	C	E
PLUNGER: ON	1.4 V	0.8 V	0 V
PLUNGER: OFF	0.3 V	13.9 V	0 V

Q517
2SD946

	B	C	E
PLUNGER: ON	1.4 V	0.8 V	0 V
PLUNGER: OFF	0.2 V	13.9 V	0 V

Q518
2SD946

	B	C	E
PLUNGER: ON	1.4 V	0.8 V	0 V
PLUNGER: OFF	0.2 V	13.9 V	0 V


8741V
L
①②③④⑤⑥
M
N
O
P
Q
R531
R502
D501
R507
Q501
R506
D502
R509
D538
D539
C507
R532
R503
D503
R534
R505
D505
D518
C515
D504
R527
Q509
R554
Q510
R510
Q503
C504
D528
R553
D510
R528
D511
D509
R515
D520
R514
C501
R522
R513
C502
D521
R518
C509
R533
D531
R521
R516
R558
C508
R535
R512
Q505
C518
C521
C510
R519
Q508
R529
R517
Q504
R511
Q506
R530
D525
D512
R559
R536
R524
C516
D524
R526
R525
D514
R537
C503
D513
R520
Q507
R546
D537
R544
D522
R555
D523
R523
C506
C505
D526
R556
D517
R547
C512
D508
C513
R552
Q519
R548
C511
D534
C520
Q513
P542
Q517
D527
R540
D532
R543
R538
R551
R550
D530
R545
R539
C519
Q511
Q518
R541
Q516
Q512
Q514
C514
D533
D529
C521
Q515
R557
R549
B C E

Q509
2SC945(P,Q)
[2SC945]

	B	C	E
REC/MODE ⇄	10.2 V	13.9 V	9.5 V
STOP	0 V	13.9 V	0 V

Q510
2SC945(P,Q)
[2SC945]

	B	C	E
REC/MODE ⇄ /MANUAL	1.7 V	8.3 V	8.3 V
REC/MODE ⇄	0 V	9.6 V	0 V

Q508
2SC2021(S,R)
[2SC2021]

	B	C	E
REVERSE	0.66 V	0.033 V	0 V
STOP	0 V	26.0 V	0 V

Q513
2SC945(P,Q)
[2SC945]

	B	C	E
Discharg (C514)	0 V	0.034 V	0 V
Charg (C514)	0.65 V	0.034 V	0 V

Q511
2SC945(P,Q)
[2SC945]

	B	C	E
REVERSE	0.66 V	0.034 V	0 V
etc.	0.034 V	11.8 V	0 V

Q512
2SC945(P,Q)
[2SC945]

	B	C	E
REVERSE	0.034 V	11.8 V	0 V
etc.	0.65 V	0.034 V	0 V

Q514
2SC1318(R,S)
[2SC1318-R]

	B	C	E
REVERSE	11.3 V	13.9 V	10.7 V
etc.	0.033 V	13.9 V	0 V

Q515
2SC945(P,Q)
[2SC945]

	B	C	E
REVERSE	0.66 V	0 V	0 V
MODE ⇄ /PLAY/TAPE END	0 V	13.5 V	0 V

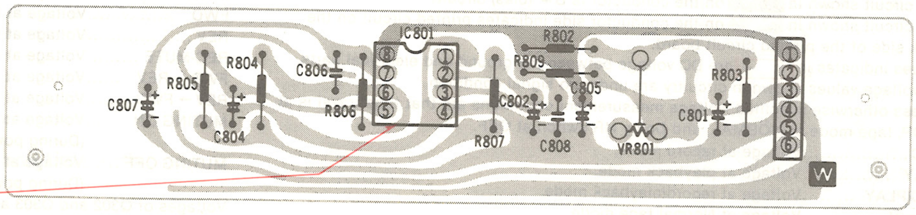
Q516
2SC945(P,Q)
[2SC945]

	B	C	E
PLUNGER: ON	12.0 V	13.9 V	11.3 V
PLUNGER: OFF	0 V	13.9 V	0 V

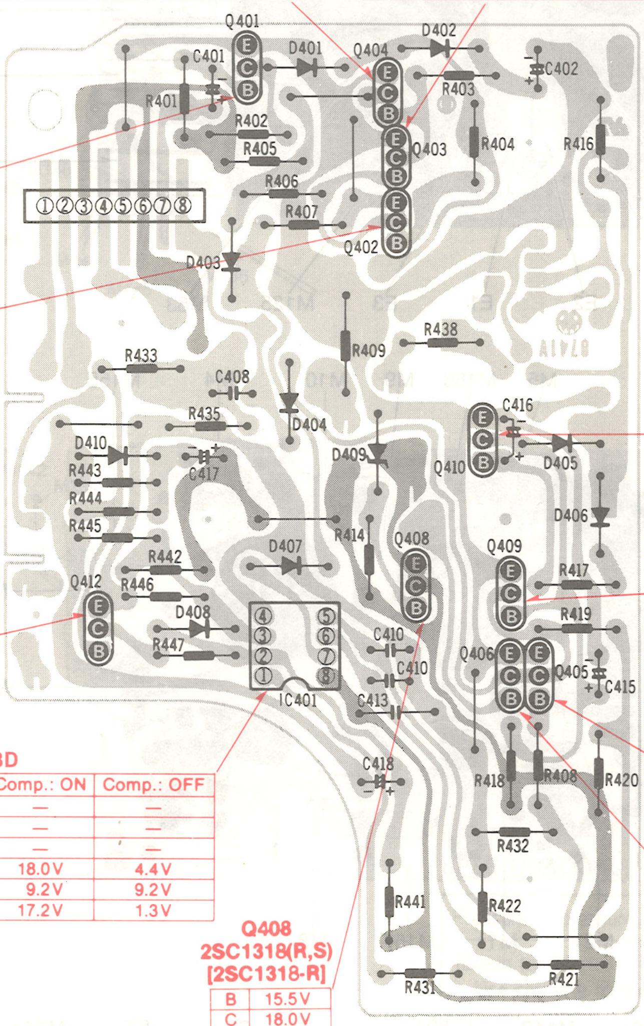
10 PHOTO SENSOR AMP CIRCUIT BOARD

IC801 NJM4558D

	Normal	Metal
1	5.3 V	4.9 V
2	5.3 V	4.9 V
3	5.3 V	4.9 V
4	—	—
5	5.3 V	4.9 V
6	5.3 V	4.9 V
7	4.0 V	3.7 V
8	15.5 V	15.5 V


IC801
R802
R804
R809
C806
R803
R805
⑧⑦⑥⑤
①②③④
C807
C805
C802
R806
C804
R807
C808
VR801
C801
①②③④⑤⑥
W

4 TAPE END DETECTOR CIRCUIT BOARD


Q401
C401
D401
Q404
D402
C402
R401
R402
R403
R405
Q403
R404
R416
R406
R407
①②③④⑤⑥⑦⑧
Q402
D403
R409
R438
R433
C408
R435
D404
C416
D410
R443
D409
Q410
D405
C417
R444
R445
D406
R414
Q408
Q409
R442
D407
Q412
R446
R417
D408
R419
C410
R447
Q406
Q405
C415
C410
C413
IC401
C418
R418
R408
R420
R432
R441
R422
R431
R421
E
C
B

Q404
2SC945(P,Q)
[2SC945-Q]

	B	C	E
TAPE END	0.004 V	12.5 V	0 V
STOP/PAUSE	0.60 V	0.04 V	0 V

Q403
2SC945(P,Q)
[2SC945-Q]

	B	C	E
TAPE END	0.61 V	0.004 V	0 V
STOP/PAUSE	0.04 V	0.004 V	0 V

Q401
2SC945(P,Q)
[2SC945]

	B	C	E
REC/PLAY	−4 V	11.5 V	0 V
etc.	0.64 V	0.02 V	0 V

Q402
2SC945(P,Q)
[2SC945]

	B	C	E
REC/PLAY	0 V	0 V	0 V
STOP	0.62 V	0.004 V	0 V

Q410
2SC945(P,Q)
[2SC945]

	B	C	E
PHOTO ON	0.11 V	0.6 V	0 V
etc.	0.62 V	0.008 V	0 V

Q409
2SC945(P,Q)
[2SC945]

	B	C	E
PHOTO ON	0.007 V	18.0 V	0 V
etc.	0.61 V	0.03 V	0 V

Q412
2SC945(P,Q)
[2SC945]

	B	C	E
PLAY	0 V	9.3 V	0 V
STOP	0.6 V	0.011 V	0 V

Q405
2SD592NC(S,R)
[2SD592]

	B	C	E
TIMER ON	0.60 V	0.03 V	0 V
TIMER OFF	0.22 V	0.03 V	0 V

IC401
NJM4558D

	TIMER ON	TIMER OFF	Comp.: ON	Comp.: OFF
1	16.5 V	1.2 V	—	—
2	0.11 V	9.4 V	—	—
3	7.2 V	9.0 V	—	—
5	—	—	18.0 V	4.4 V
6	—	—	9.2 V	9.2 V
7	—	—	17.2 V	1.3 V

Q406
2SC945(P,Q)
[2SC945]

	B	C	E
REC/PLAY	0.22 V	0.03 V	0 V
STOP	0.61 V	0.03 V	0 V

Q408
2SC1318(R,S)
[2SC1318-R]

B	15.5 V
C	18.0 V
E	14.8 V

NOTES:

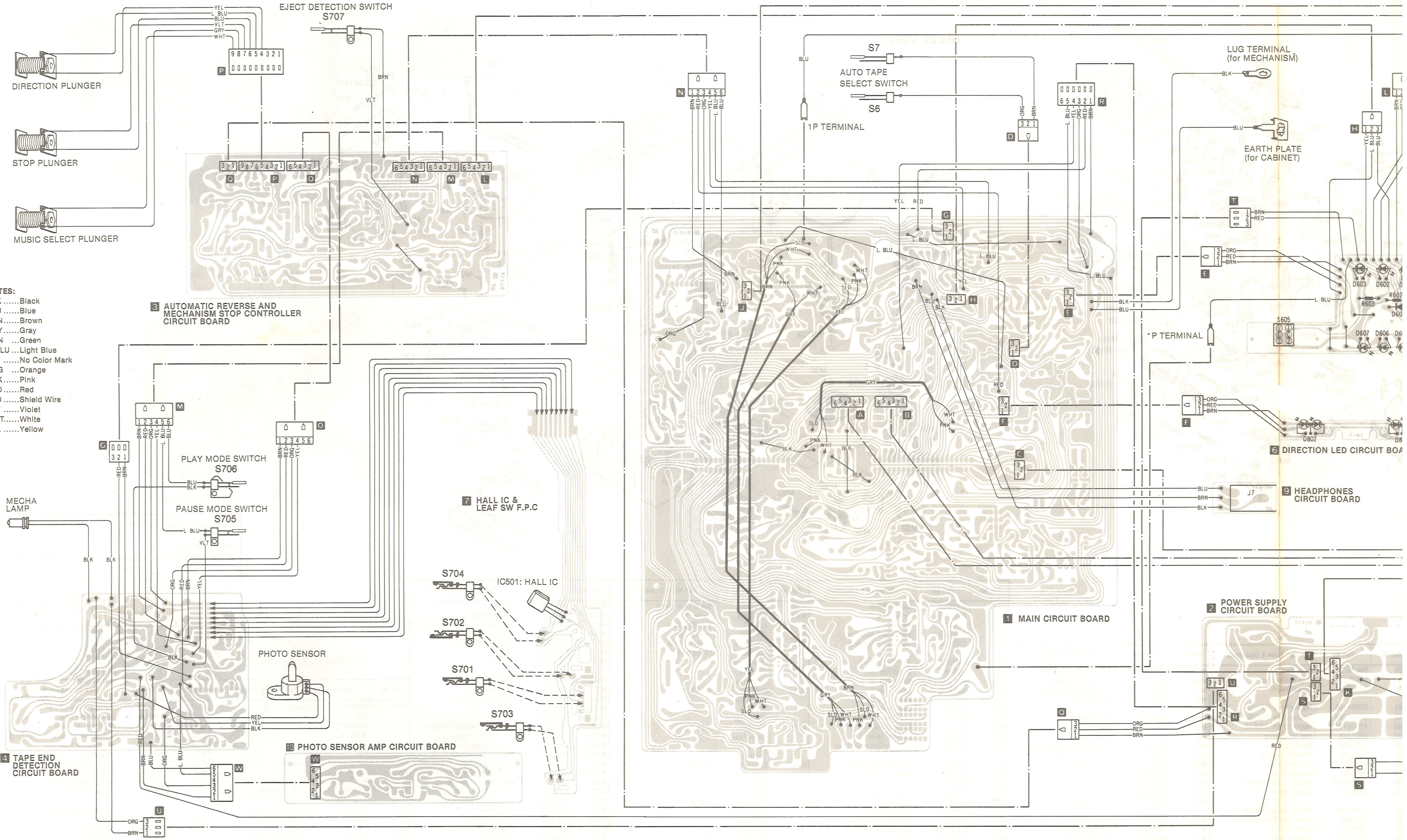
- The circuit shown in ▩ on the conductor is B+ (bias) circuit.
- The circuit shown in ░ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- Values indicates in ☐ are DC voltage between the ground and electrical parts.
- All voltage values shown in circuitry are under no signal condition.
  Unless otherwise specified, voltage measurement conditions are that tape travel is at STOP, tape mode at NORMAL, and Dolby NR switch at OFF.

STOP ....Voltage at stop mode.
PLAY/REC ....Voltage playback/record mode.
STOP/PAUSE ....Voltage at stop/pause mode.
TAPE END ....Voltage at tape end mode.
MODE ⟲ ....Voltage at mode ⟲ (S600: ON).
MODE ⊃ ....Voltage at mode ⊃ (S602: ON).
TIMER ON ....Voltage when a high level output is given from the timer circuit.
PHOTO ON ....Voltage during photo sensing.
REC/MODE ⇄ /MANUAL.........Voltage when operation is switched to manual during recording in Mode ⇄ (S601: ON).
PLAY/TAPE END ....Voltage when the end of tape is played back.
MODE ⇄ /PLAY/TAPE END......Voltage when the end of tape is played back in Mode ⇄ (S601: ON).
REVERSE ....Voltage when tape travel is reversed.

- Described in the circuit board diagram are two types of numbers; the supply parts number and production parts number for transistors. One type of number is used for supply parts number and production parts number when they are identical.
  e.g. Q1
  {2SB745(T,U)◄—**Production parts number**
  {[2SB745T]◄—**Supply parts number**
- **The supply parts number is described alone in the replacement parts list.**

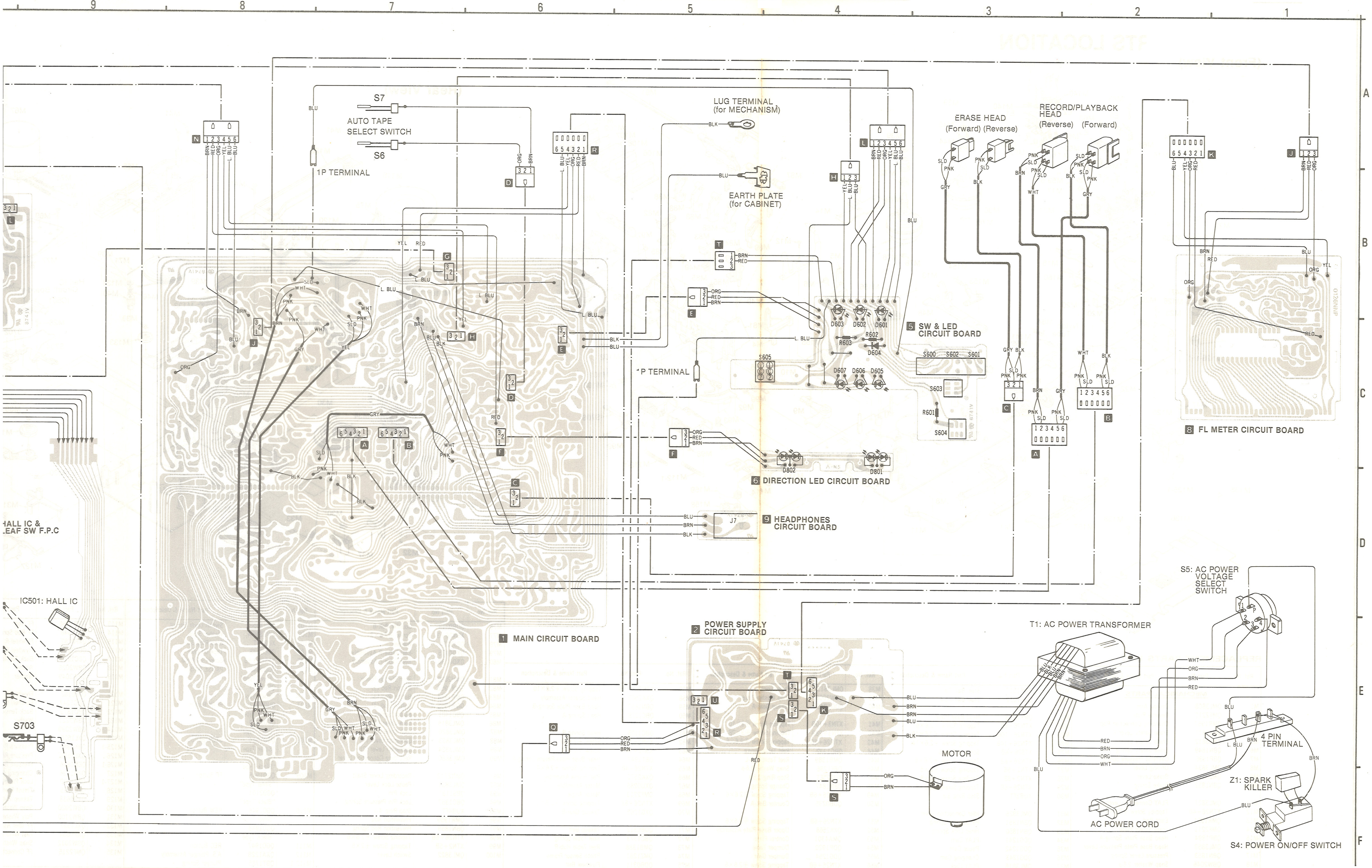
- **This circuit board diagram may be modified at any time with the development of new technology.**

WIRING CONNECTION DIAGRAM


DIRECTION PLUNGER
STOP PLUNGER
MUSIC SELECT PLUNGER
EJECT DETECTION SWITCH
S707
3 AUTOMATIC REVERSE AND MECHANISM STOP CONTROLLER CIRCUIT BOARD
MECHA LAMP
PLAY MODE SWITCH
S706
PAUSE MODE SWITCH
S705
7 HALL IC & LEAF SW F.P.C
S704
IC501: HALL IC
S702
S701
S703
PHOTO SENSOR
10 PHOTO SENSOR AMP CIRCUIT BOARD
4 TAPE END DETECTION CIRCUIT BOARD
S7
AUTO TAPE SELECT SWITCH
S6
1P TERMINAL
LUG TERMINAL (for MECHANISM)
EARTH PLATE (for CABINET)
1 MAIN CIRCUIT BOARD
6 DIRECTION LED CIRCUIT BOA
9 HEADPHONES CIRCUIT BOARD
J7
1P TERMINAL
S605
D603
D602
R603
R602
D607
D606
D802
2 POWER SUPPLY CIRCUIT BOARD
YEL
L. BLU
BLU
VLT
GRY
WHT
BRN
RED
ORG
BLK
PNK
SLD
A
B
C
D
E
F
G
H
J
K
L
M
N
O
P
Q
R
S
T
U
W

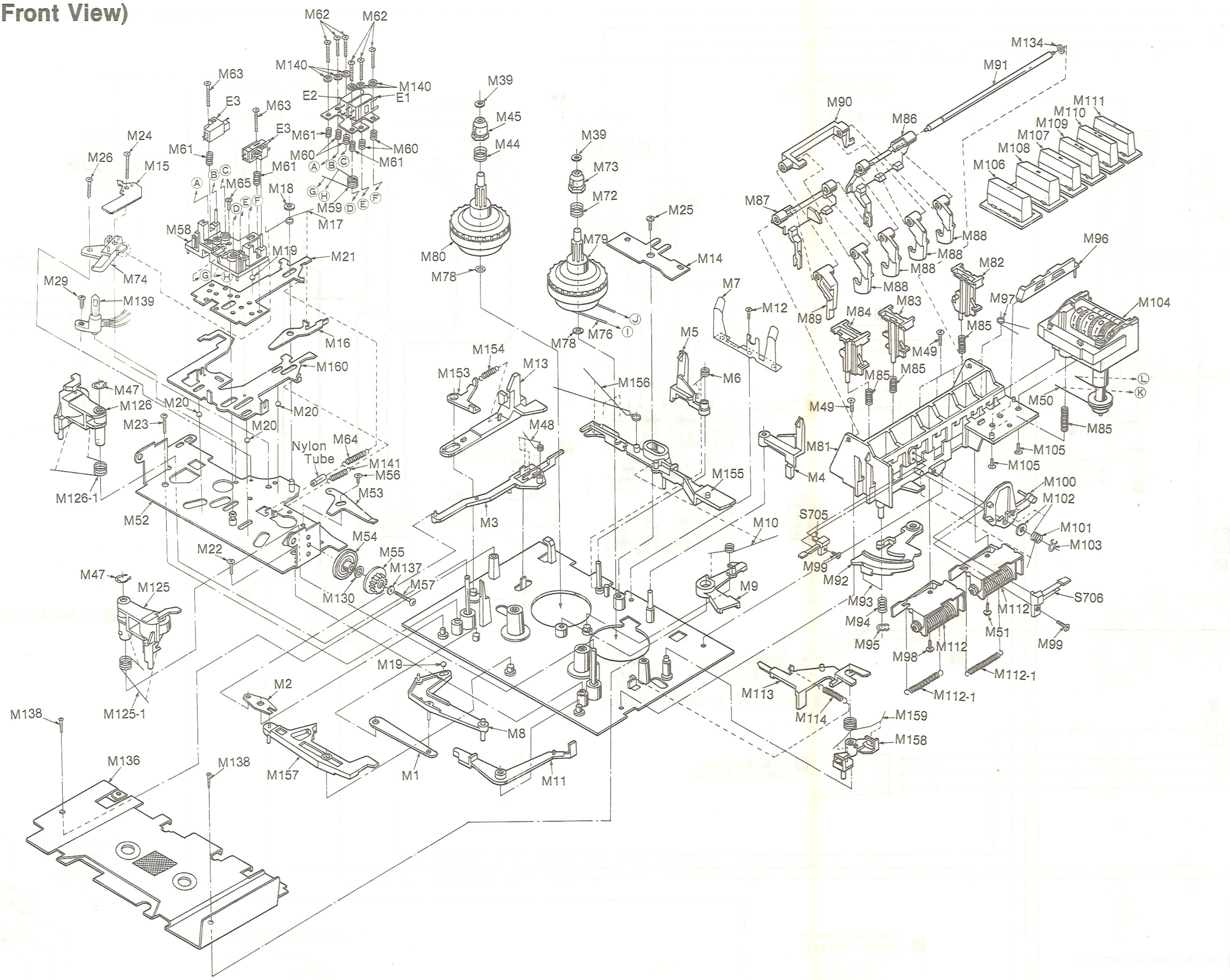
NOTES:

BLK ......Black
BLU ......Blue
BRN......Brown
GRY......Gray
GRN ...Green
L. BLU ...Light Blue
NIL ......No Color Mark
ORG ...Orange
PNK......Pink
RED......Red
SLD ......Shield Wire
VLT ......Violet
WHT......White
YEL ......Yellow


9
8
7
6
5
4
3
2
1
A
B
C
D
E
F
S7
AUTO TAPE
SELECT SWITCH
S6
1P TERMINAL
LUG TERMINAL
(for MECHANISM)
EARTH PLATE
(for CABINET)
ERASE HEAD
(Forward) (Reverse)
RECORD/PLAYBACK
HEAD
(Reverse) (Forward)
D603
D602
D601
R603
R602
D604
S605
S600 S602 S601
D607 D606 D605
S603
R601
S604
1P TERMINAL
5 SW & LED
CIRCUIT BOARD
8 FL METER CIRCUIT BOARD
D802
D801
6 DIRECTION LED CIRCUIT BOARD
J7
9 HEADPHONES
CIRCUIT BOARD
HALL IC &
LEAF SW F.P.C
IC501: HALL IC
S703
1 MAIN CIRCUIT BOARD
2 POWER SUPPLY
CIRCUIT BOARD
T1: AC POWER TRANSFORMER
S5: AC POWER
VOLTAGE
SELECT
SWITCH
4 PIN
TERMINAL
MOTOR
Z1: SPARK
KILLER
AC POWER CORD
S4: POWER ON/OFF SWITCH
BRN
RED
ORG
YEL
BLU
L.BLU
BLK
WHT
PNK
SLD
GRY

MECHANICAL PARTS LOCATION

(Front View)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Nylon Tube
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M105
M100
M102
S705
M99
M92
M101
M103
M93
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M95
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M112
M112
M51
S706
M99
M112-1
M112-1
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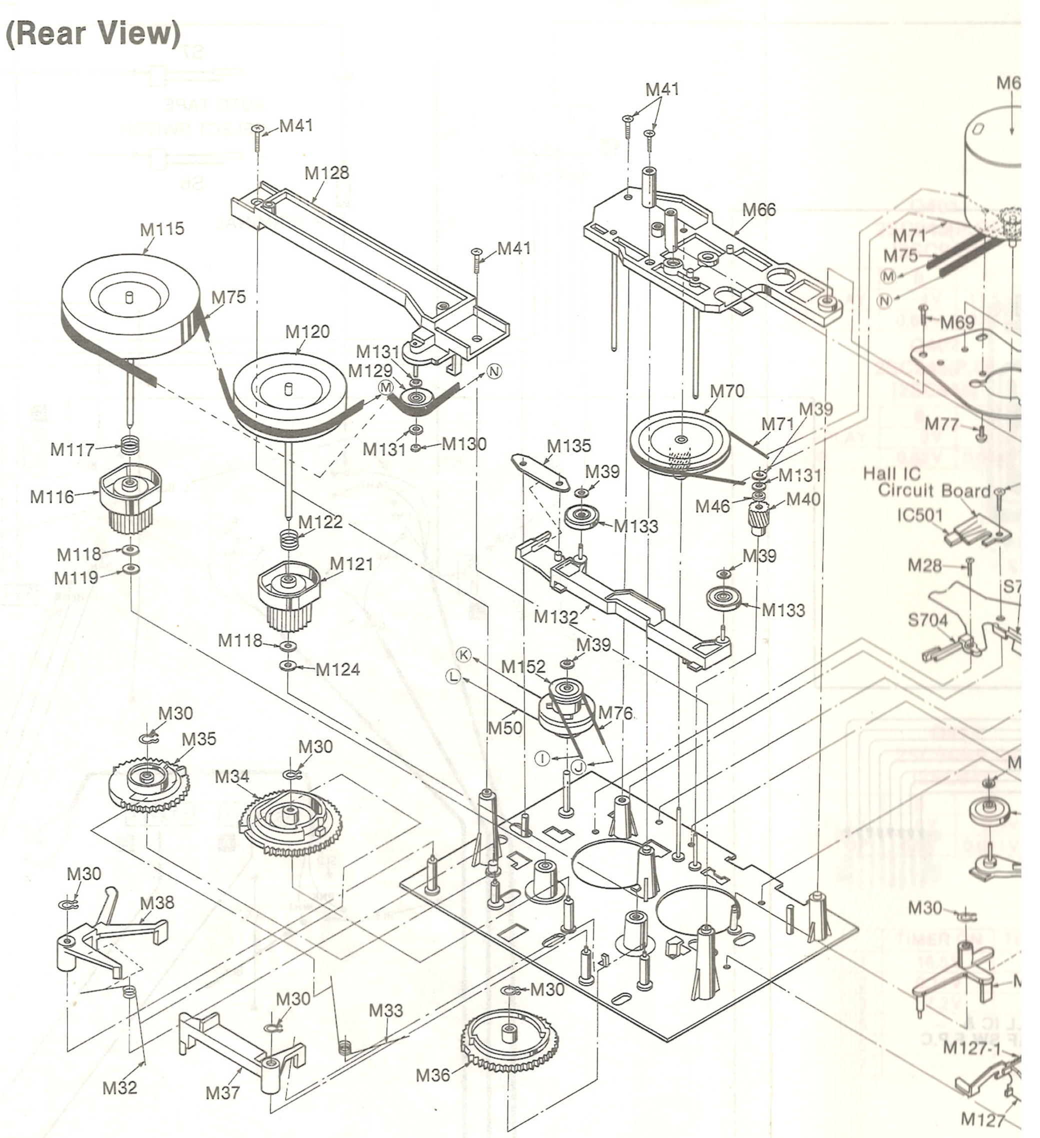
I
J
K
L

(Rear View)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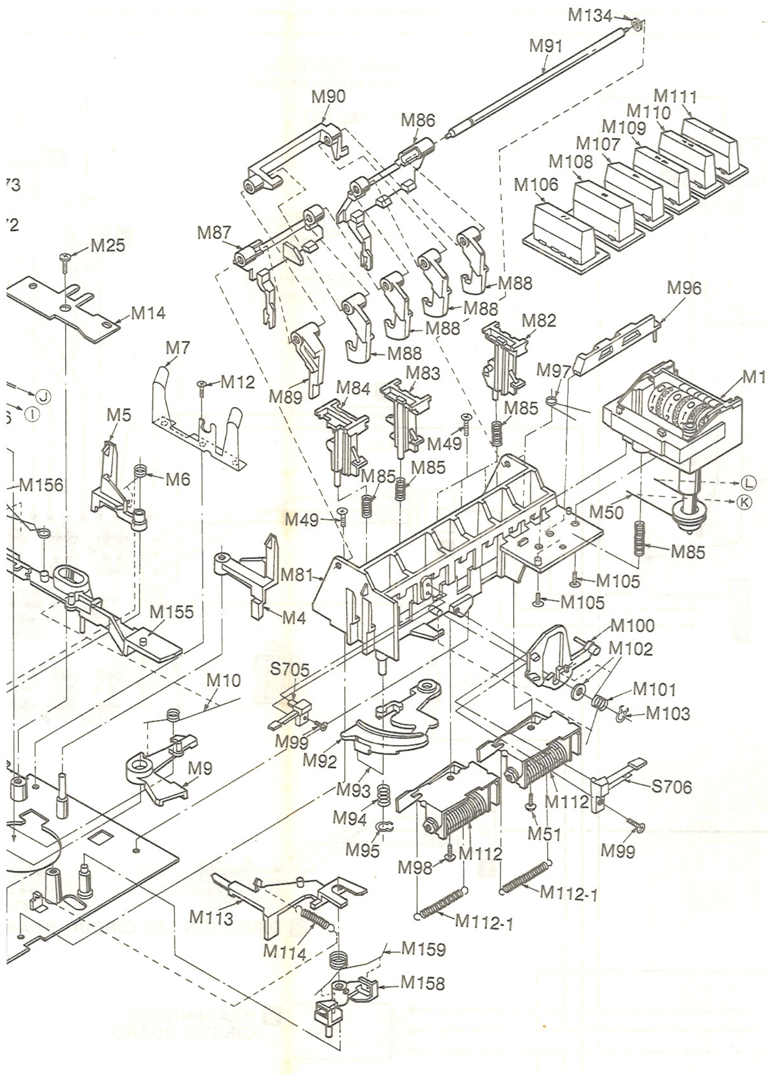
M36
M71
M75
M69
M77
Hall IC
Circuit Board
IC501
M28
S704
M30
M127-1
M127
K
L
M
N
I
J

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
	MECHANICAL PARTS	
M1	QML3808	Driving Arm
M2	QMF2212	Reverse Plate
M3	QMR1957	Changing Connection Rod
M4	QML3811	Erase Safety Lever-R
M5	QML3812	Erase Safety Lever-L
M6	QBN1849	Erase Safety Spring
M7	QBP1936	Cassette Pressure Spring
M8	QML3834	Driving Lever
M9	QML3818	Brake Lever
M10	QBN1852	Brake Spring
M11	QML3827	PLAY Connection Lever
M12	XTN26+4B	Tapping Screw ⊕2.6×4
M13	QMR1951	Eject Rod
M14	QMF2211	Erase Safety Plate
M15	QBP1894	Head Base Plate Spring-A
M16	QML3859	Head Base Plate Pressure Lever
M17	QBN1853	Pressure Lever Spring
M18	QBW2046	Snap Washer 2.6ϕ
M19	QDK1017	Steel Ball 2ϕ
M20	QDK1012	Steel Ball 2.5ϕ
M21	QMK1935	Head Base Plate
M22	XTN26+6B	Tapping Screw ⊕2.6×6
M23	XTN26+10B	Tapping Screw ⊕2.6×10
M24	XTN26+14B	Tapping Screw ⊕2.6×14
M25	XTS26+8B	Screw ⊕2.6×8
M26	XTN26+6B	Tapping Screw ⊕2.6×6
M27	XTN2+5B	Tapping Screw ⊕2×5
M28	XTN2+8B	Tapping Screw ⊕2×8
M29	XTN26+6B	Tapping Screw ⊕2.6×6
M30	XUB3FT	Stop Ring 3ϕ
M31	QML3826	Idler Connection Lever
M32	QBN1851	Pause Lock Spring
M33	QBN1850	Head Lock Spring
M34	QDG1241	PLAY Cam
M35	QDG1242	Pause Cam
M36	QDG1243	Changing Cam
M37	QML3816	PLAY Lock
M38	QML3813	Pause Lock
M39	QBW2008	Snap Washer 1.6ϕ
M40	QDG1245	Takeup Gear-A
M41	XTN3+10B	Tapping Screw ⊕3×10
M42	XTN3+28B	Tapping Screw ⊕3×28
M43	XTN26+6B	Tapping Screw ⊕2.6×6
M44	QBC1372	Reel Table Spring
M45	QMB1389	Reel Table Hub-L
M46	QBF1286	Snap Washer 1.6ϕ
M47	XUC25FT	Stop Ring 2.5ϕ
M48	QBN1847	Change Spring
M49	XTN26+6B	Tapping Screw ⊕2.6×6
M50	QDB0235	Counter Belt-A
M51	XTN26+6B	Tapping Screw ⊕2.6×6
M52	QXK2568	Upper Base Plate Assembly
M53	QMA4301	Control Plate
M54	QDP1920	Dumper Table
M55	QDG1254	Dumper Gear
M56	XTN26+6B	Tapping Screw ⊕2.6×6
M57	XTN26+10B	Tapping Screw ⊕2.6×10
M58	QXK2569	Head Spacer Assembly
M59	QBN1857	Head Base Plate Spring-B
M60	QBC1278	Head Spring-A
M61	QBC1103	Head Spring-B
M62	XSN2+10	Screw ⊕2×10
M63	XSN2+14	Screw ⊕2×14
M64	QBT1947	Head Base Plate Return Spring-A
M65	XTN26+4B	Tapping Screw ⊕2.6×4
M66	QXK2572	Reel Frame Assembly
M67	QXU0285	Motor Assembly
M68	QMF2213	Motor Angle
M69	XTN26+6B	Tapping Screw ⊕2.6×6
M70	QXG1065	Takeup Gear-B
M71	QDB0312	Takeup Belt
M72	QBC1373	Reel Table Spring
M73	QMB1388	Reel Table Hub-R
M74	QMZ1281	Photo Sensor Frame
M75	QDB0311	Flywheel Belt
M76	QDB0313	Counter Belt-B
M77	XSN26+3	Screw ⊕2.6×3
M78	QBJ3221	Washer
M79	QXD0135	Reel Table-R Assembly
M80	QXD0136	Reel Table-L Assembly
M81	QMH2082	Push Button Frame
M82	QMR1952	Button Rod (1)
M83	QMR1954	Button Rod (3)
M84	QMR1955	Button Rod (4)
M85	QBC1401	Button Spring
M86	QML3819	Lock Lever (1)
M87	QML3820	Lock Lever (2)
M88	QML3823	Operation Lever (1)
M89	QML3824	Operation Lever (2)
M90	QML3860	Recording Connection Lever
M91	QMN2712	Recording Lever Shaft
M92	QML3821	Pause Lock Lever
M93	QBS1137	Lock Pin
M94	QBC1357	Lock Pin Pressure Spring
M95	XUB4FT	Stop Ring 4ϕ
M96	QMR1959	Prevention Rod
M97	QBN1859	Prevention Rod Spring
M98	XTN26+6B	Tapping Screw ⊕2.6×6
M99	XTN2+5B	Tapping Screw ⊕2×5
M100	QML3822	Switch Lever
M101	QBN1858	Switch Lever Spring
M102	XWE35BW	Washer 3.5ϕ
M103	XUB3FT	Stop Ring 3ϕ
M104	QDC0148	Tape Counter
M105	XTS26+8B	Screw ⊕2.6×8
M106	QG01942 "Silver Type"	PAUSE Button
	QG02098 "Black Type"	〃
M107	QG01943 "Silver Type"	PLAY Button
	QG02099 "Black Type"	〃
M108	QG01944 "Silver Type"	STOP Button
	QG02100 "Black Type"	〃
M109	QG01945 "Silver Type"	FF Button
	QG02101 "Black Type"	〃
M110	QG01946 "Silver Type"	REW Button
	QG01943 "Black Type"	〃
M111	QG01947	REC Button
M112	QXA1228	A.S. Plunger Assembly
M112-1	QBT1785	Plunger Spring
M113	QMR1956	FF Rod
M114	QBT1948	FF Rod
M115	QXF0182	Flywhe
M116	QDG1246	Flywhe
M117	QBC1270	Back T
M118	QBW2026	Washer
M119	QBW2049	Washer
M120	QXF0183	Flywhe
M121	QDG1247	Flywhe
M122	QBC1373	Back T
M123	QBW3221	Washer
M124	QBW2099	〃
M125	QXL1520	Pressur
M125-1	QBN1895	Pressur
M126	QXL1521	Pressur
M126-1	QBN1896	Pressur
M127	QXA1226	Changi
M127-1	QBT1500	Lock Pl
M128	QXL1525	Thrust
M129	QXP0633	Takeup
M130	QBW2020	Snap W
M131	QBW2100	Poly W
M132	QXL1527	FF Idler
M133	QXP0634	Fast W
M134	QBW2012	Snap W
M135	QMF2215	FF Con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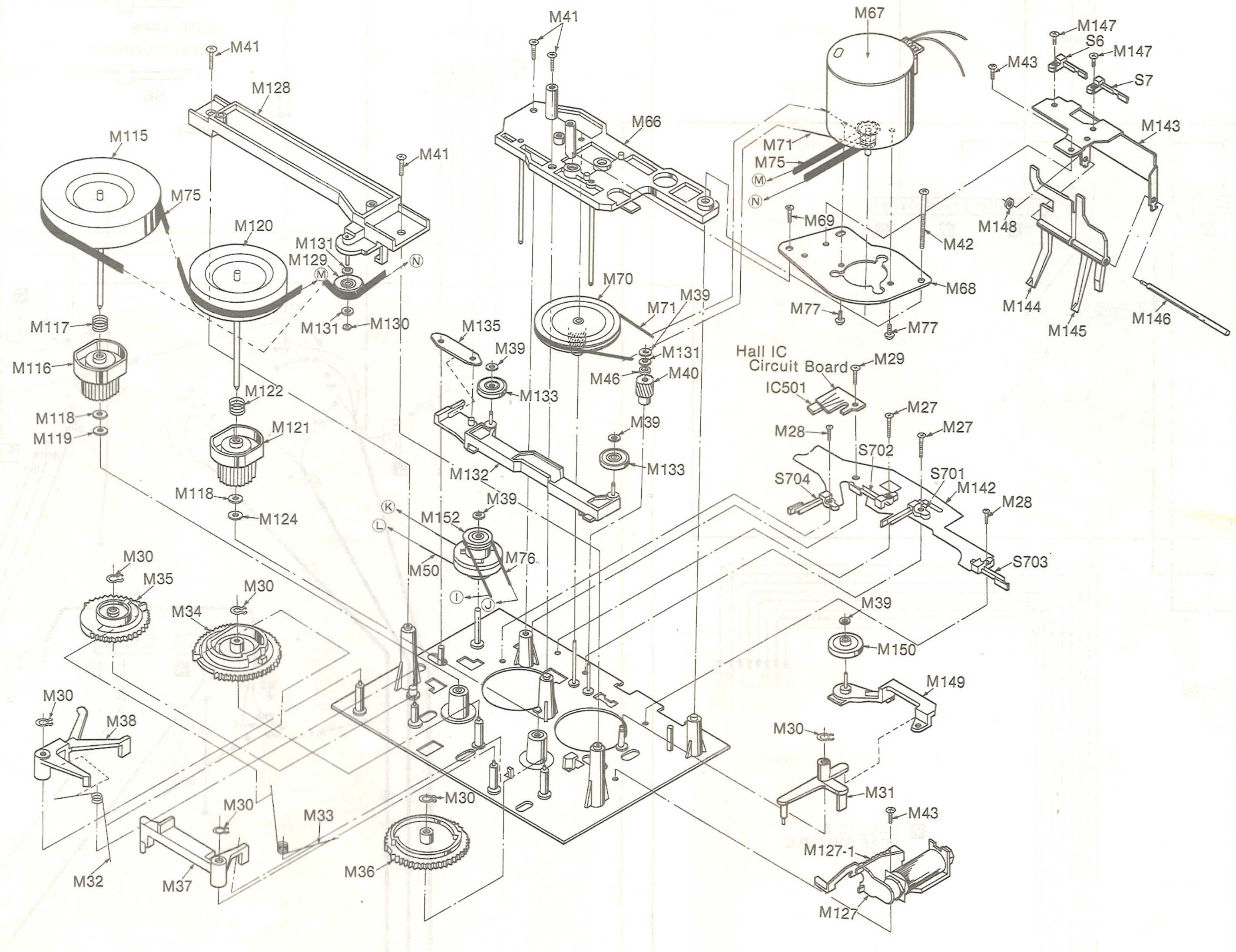
(Rear View)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M67
M75
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M42
M68
M77
Hall IC
Circuit Board
IC501
M29
M27
M28
S702
S704
S701
M142
S703
M150
M149
M31
M43
M127-1
M127
M147
S6
S7
M143
M148
M144
M145
M146

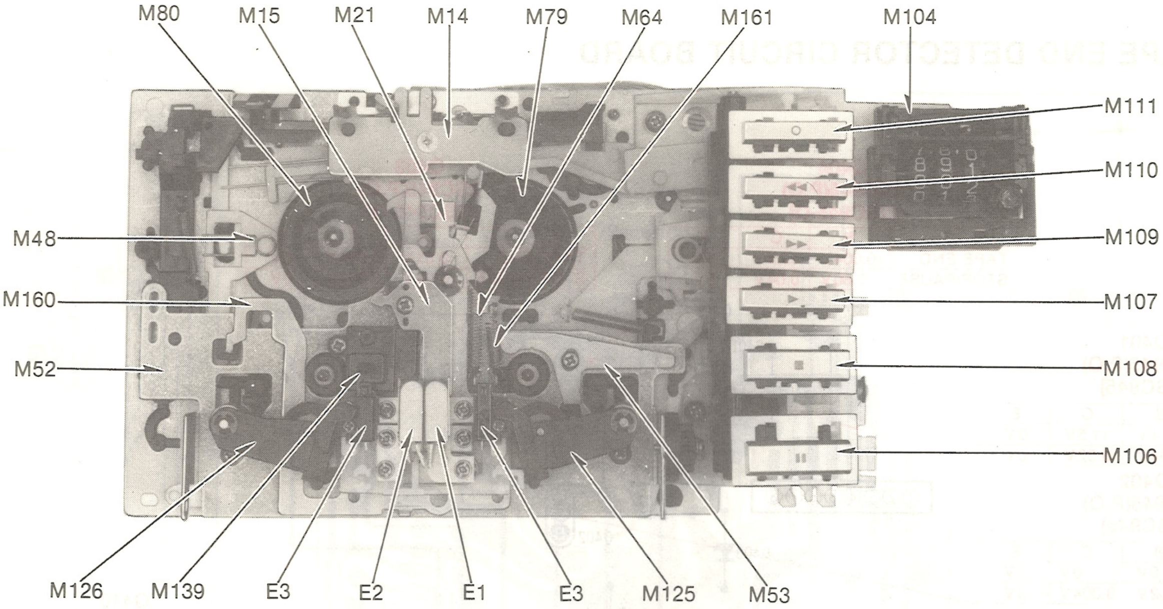
SPECIFICATIONS

Pressure of pressure roller	380±40 g
Takeup tension * Use cassette torque meter ··· QZZSRKCT	40^{+15}_{-10} g-cm
Wow and flutter; (JIS) * Use test tape ··· QZZCWAT	Less than 0.14% (WRMS)

Ref. No.	Part No.	Part Name & Description
M38	QML3813	Pause Lock
M39	QBW2008	Snap Washer 1.6ϕ
M40	QDG1245	Takeup Gear-A
M41	XTN3+10B	Tapping Screw ⊕3×10
M42	XTN3+28B	Tapping Screw ⊕3×28
M43	XTN26+6B	Tapping Screw ⊕2.6×6
M44	QBC1372	Reel Table Spring
M45	QMB1389	Reel Table Hub-L
M46	QBF1286	Snap Washer 1.6ϕ
M47	XUC25FT	Stop Ring 2.5ϕ
M48	QBN1847	Change Spring
M49	XTN26+6B	Tapping Screw ⊕2.6×6
M50	QDB0235	Counter Belt-A
M51	XTN26+6B	Tapping Screw ⊕2.6×6
M52	QXK2568	Upper Base Plate Assembly
M53	QMA4301	Control Plate
M54	QDP1920	Dumper Table
M55	QDG1254	Dumper Gear
M56	XTN26+6B	Tapping Screw ⊕2.6×6
M57	XTN26+10B	Tapping Screw ⊕2.6×10
M58	QXK2569	Head Spacer Assembly
M59	QBN1857	Head Base Plate Spring-B
M60	QBC1278	Head Spring-A
M61	QBC1103	Head Spring-B
M62	XSN2+10	Screw ⊕2×10
M63	XSN2+14	Screw ⊕2×14
M64	QBT1947	Head Base Plate Return Spring-A
M65	XTN26+4B	Tapping Screw ⊕2.6×4
M66	QXK2572	Reel Frame Assembly
M67	QXU0285	Motor Assembly
M68	QMF2213	Motor Angle
M69	XTN26+6B	Tapping Screw ⊕2.6×6
M70	QXG1065	Takeup Gear-B
M71	QDB0312	Takeup Belt
M72	QBC1373	Reel Table Spring
M73	QMB1388	Reel Table Hub-R
M74	QMZ1281	Photo Sensor Frame
M75	QDB0311	Flywheel Belt

Ref. No.	Part No.	Part Name & Description
M76	QDB0313	Counter Belt-B
M77	XSN26+3	Screw ⊕2.6×3
M78	QBJ3221	Washer
M79	QXD0135	Reel Table-R Assembly
M80	QXD0136	Reel Table-L Assembly
M81	QMH2082	Push Button Frame
M82	QMR1952	Button Rod (1)
M83	QMR1954	Button Rod (3)
M84	QMR1955	Button Rod (4)
M85	QBC1401	Button Spring
M86	QML3819	Lock Lever (1)
M87	QML3820	Lock Lever (2)
M88	QML3823	Operation Lever (1)
M89	QML3824	Operation Lever (2)
M90	QML3860	Recording Connection Lever
M91	QMN2712	Recording Lever Shaft
M92	QML3821	Pause Lock Lever
M93	QBS1137	Lock Pin
M94	QBC1357	Lock Pin Pressure Spring
M95	XUB4FT	Stop Ring 4ϕ
M96	QMR1959	Prevention Rod
M97	QBN1859	Prevention Rod Spring
M98	XTN26+6B	Tapping Screw ⊕2.6×6
M99	XTN2+5B	Tapping Screw ⊕2×5
M100	QML3822	Switch Lever
M101	QBN1858	Switch Lever Spring
M102	XWE35BW	Washer 3.5ϕ
M103	XUB3FT	Stop Ring 3ϕ
M104	QDC0148	Tape Counter
M105	XTS26+8B	Screw ⊕2.6×8
M106	QG01942 "Silver Type"	PAUSE Button
	QG02098 "Black Type"	"
M107	QG01943 "Silver Type"	PLAY Button
	QG02099 "Black Type"	"
M108	QG01944 "Silver Type"	STOP Button
	QG02100 "Black Type"	"
M109	QG01945 "Silver Type"	FF Button
	QG02101 "Black Type"	"
M110	QG01946 "Silver Type"	REW Button
	QG01943 "Black Type"	"
M111	QG01947	REC Button
M112	QXA1228	A.S. Plunger Assembly
M112-1	QBT1785	Plunger Spring
M113	QMR1956	FF Rod
M114	QBT1948	FF Rod Spring
M115	QXF0182	Flywheel-R
M116	QDG1246	Flywheel Gear-R
M117	QBC1270	Back Tension Spring
M118	QBW2026	Washer
M119	QBW2049	Washer
M120	QXF0183	Flywheel-L
M121	QDG1247	Flywheel Gear-L
M122	QBC1373	Back Tension Spring
M123	QBW3221	Washer
M124	QBW2099	"
M125	QXL1520	Pressure Roller Arm-R Assembly
M125-1	QBN1895	Pressure Roller Spring-R
M126	QXL1521	Pressure Roller Arm-L Assembly
M126-1	QBN1896	Pressure Roller Spring-L
M127	QXA1226	Changing Angle Assembly
M127-1	QBT1500	Lock Plate Spring
M128	QXL1525	Thrust Frame Assembly
M129	QXP0633	Takeup Pulley Assembly
M130	QBW2020	Snap Washer 1.6ϕ
M131	QBW2100	Poly Washer
M132	QXL1527	FF Idler Assembly
M133	QXP0634	Fast Wind Pulley Assembly
M134	QBW2012	Snap Washer
M135	QMF2215	FF Connection Plate

Ref. No.	Part No.	Part Name & Description
M136	QXH0389 "Silver Type"	Mechanism Cover
	QXH0389K "Black Type"	"
M137	XWG26	Washer 2.6ϕ
M138	XTN26+6BFZ	Tapping Screw ⊕2.6×6
M139	QZF0051	Photo Sensor
M140	XWG2	Washer 2ϕ
M141	QBT1947	Head Base Plate Return Spring-B
M142	QJi1613RR	Hall IC and Leaf Switch F.P.C.
M143	QMA4303	Detection Lever Angle
M144	QML3830	Tape Detection Lever-A (for Metal)
M145	QML3831	Tape Detection Lever-B (for Normal/CrO2)
M146	QMS2546	Detection Lever Shaft
M147	XTN2+5B	Tapping Screw ⊕2×5
M148	QBW2008	Snap Washer 1.6ϕ
M149	QXL1530	PLAY Idler Assembly
M150	QXP0635	Takeup Idler Assembly
M151	QBW2008	Snap Washer 1.6ϕ
M152	QXP0632	Magnet Pulley Assembly
M153	QML3825	Eject Prevention Lever
M154	QBT1949	Prevention Lever Spring
M155	QMR1958	Erase Prevention Rod
M156	QBN1854	Connection Spring
M157	QXL1528	Changing Lever Assembly
M158	QML3829	FF Lever
M159	QBN1848	FF Lever Spring
M160	QMF2216	Driving Plate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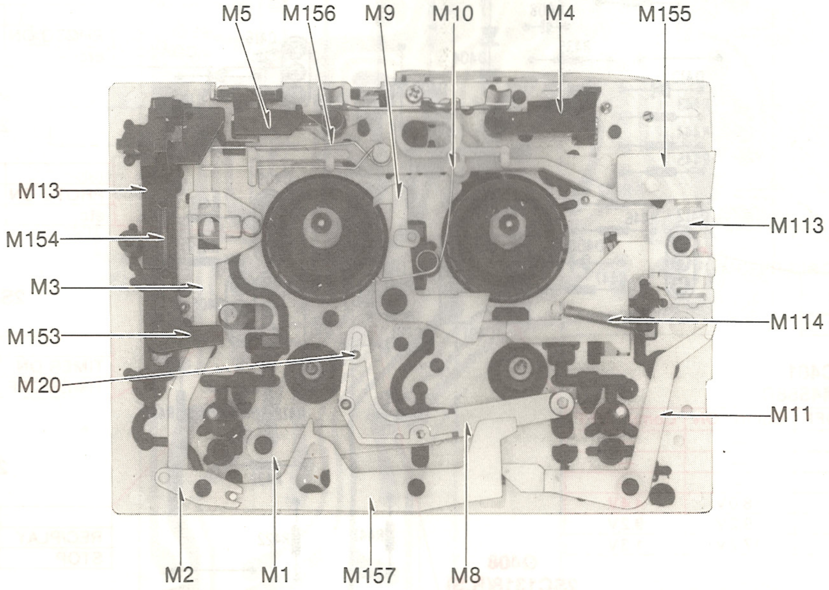
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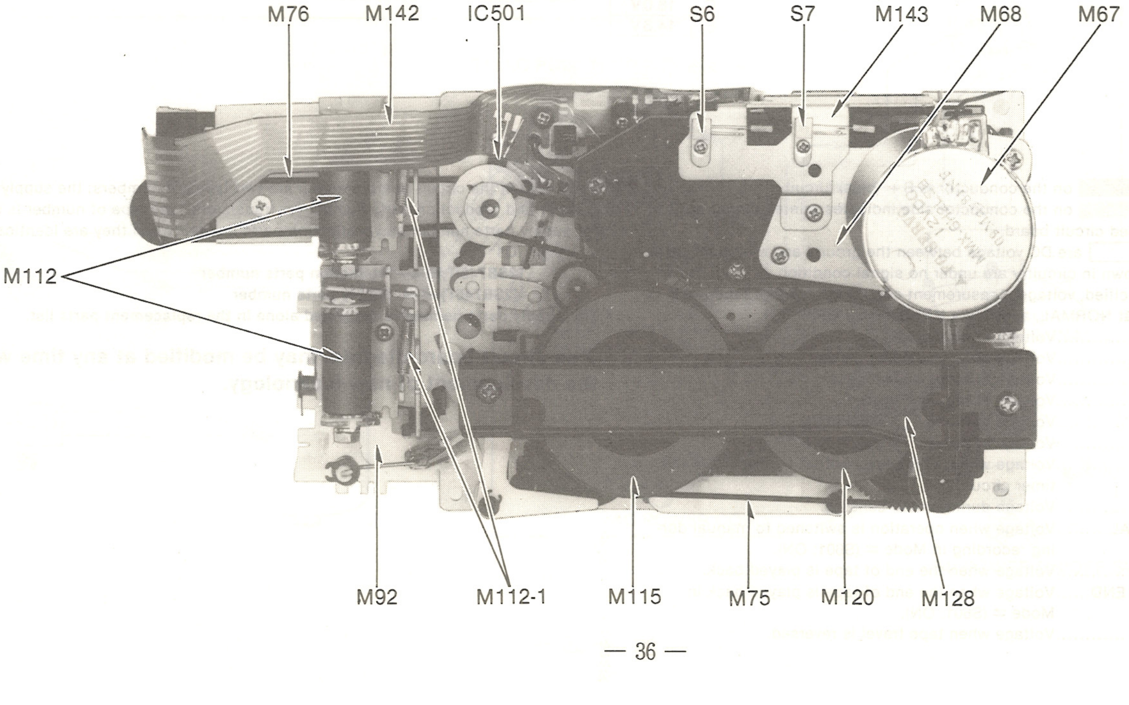
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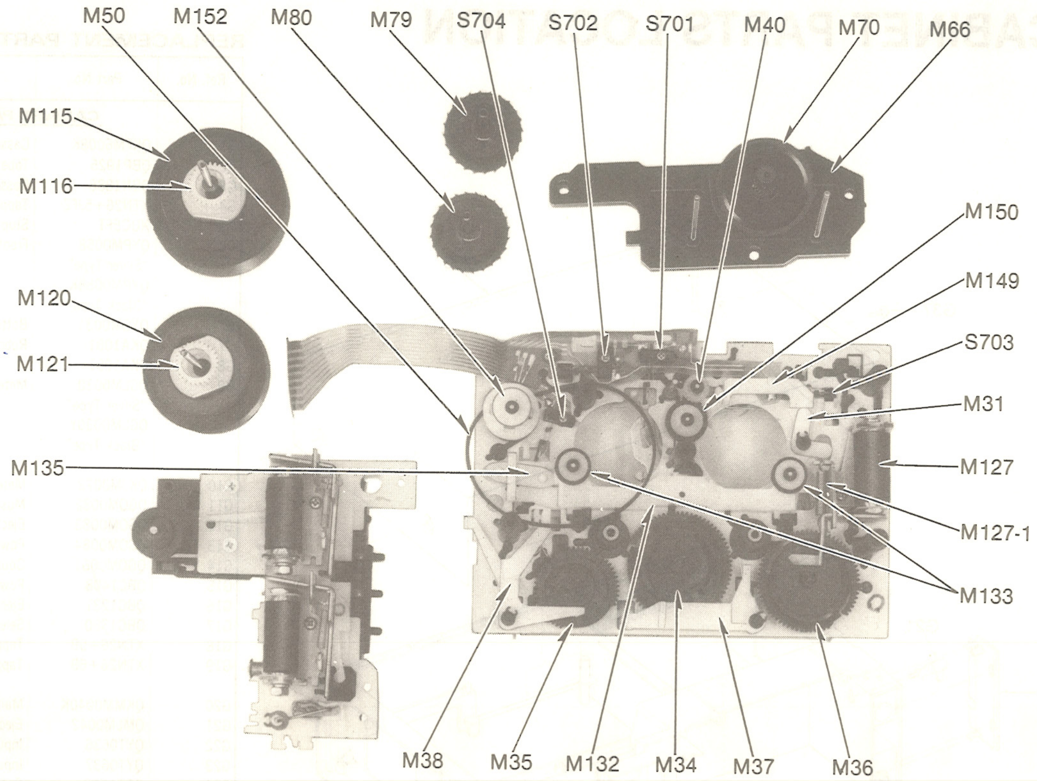
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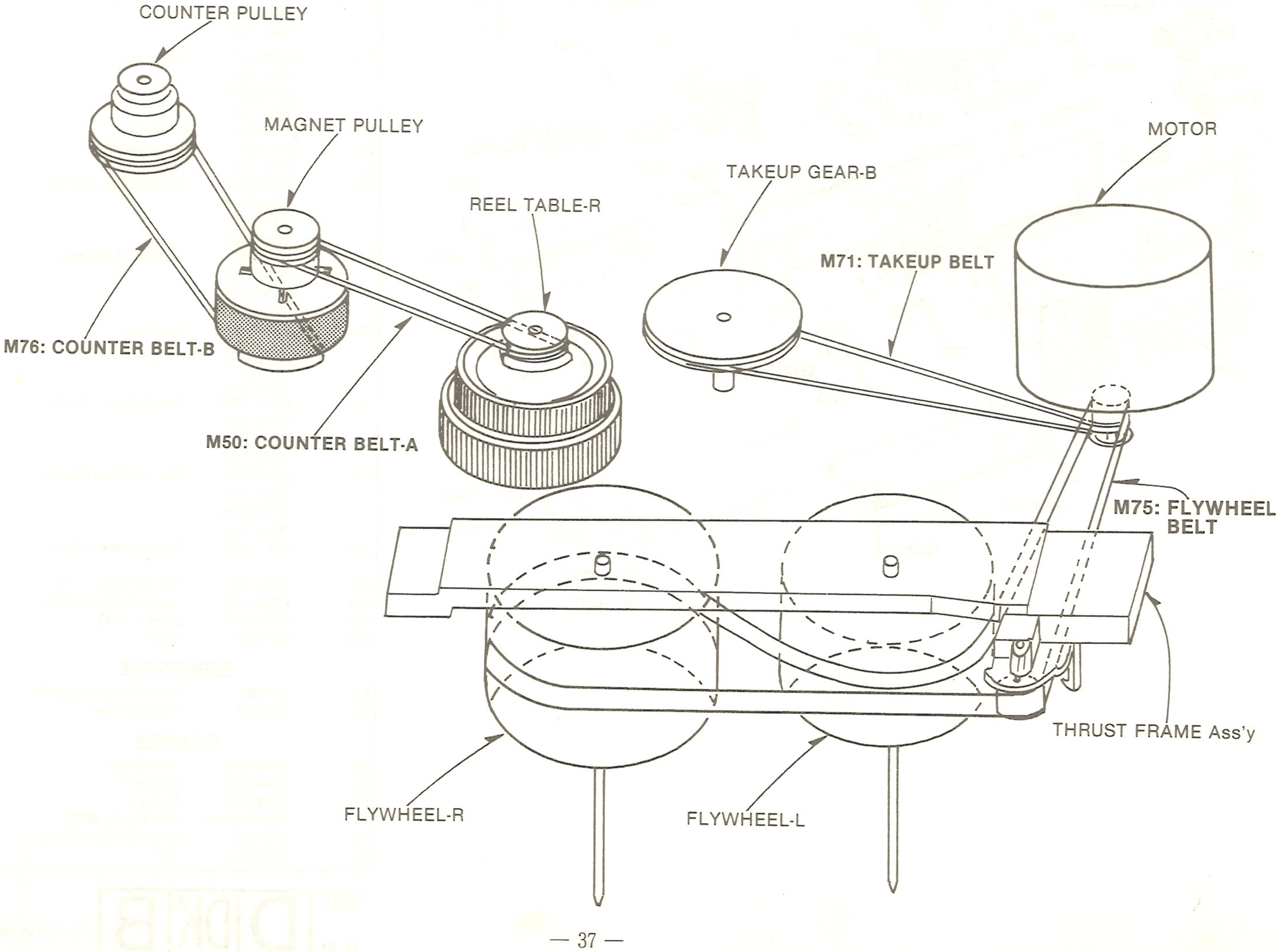
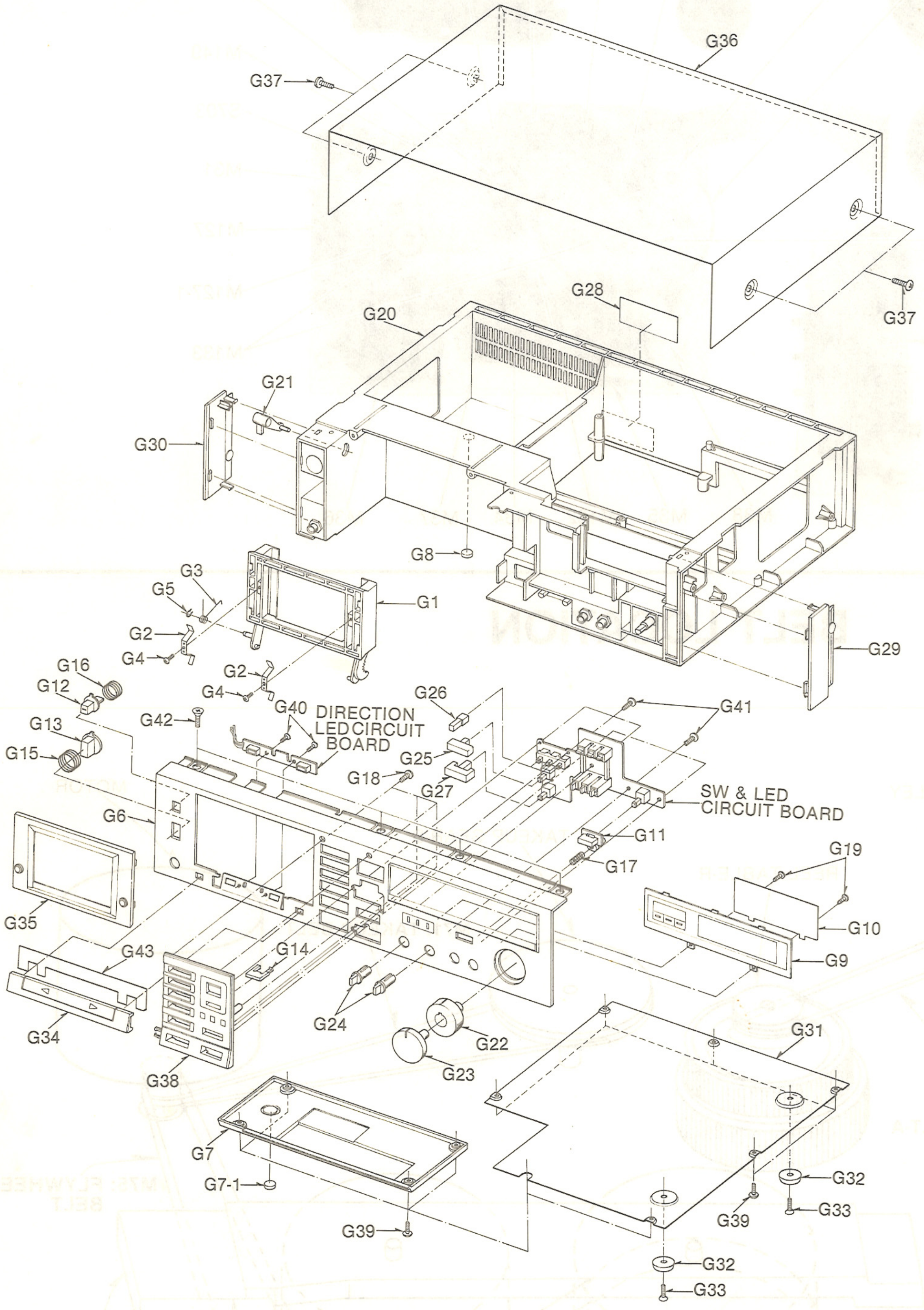
BELT LOCATION


COUNTER PULLEY
MAGNET PULLEY
REEL TABLE-R
TAKEUP GEAR-B
MOTOR
M71: TAKEUP BELT
M76: COUNTER BELT-B
M50: COUNTER BELT-A
M75: FLYWHEEL BELT
THRUST FRAME Ass'y
FLYWHEEL-R
FLYWHEEL-L

CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
	CABINET PARTS	
G1	QKFM6008K	Cassette Holder
G2	QBP1925	Tape Holding Spring
G3	QBN1886	Cassette Lid Spring
G4	XTN26+5JFZ	Tapping Screw ⊕2.6×6
G5	XUC5FT	Stop Ring 5ϕ
G6	QYPM0058 "Silver Type" QYPM0058K "Black Type"	Front Panel Assembly ″
G7	QYCM0031	Bottom Plate Assembly
G7-1	QKA1081	Rubber Foot-A
G8	QKA1081	″
G9	QGLM0030 "Silver Type" QGLM0030Y "Black Type"	Meter Cover ″
G10	QKJM0072	Meter Filter
G11	QGOM0082	Music Select Button
G12	QGOM0083	Eject Button
G13	QGOM0084	Power Button
G14	QGOM0081	Counter Button
G15	QBC1408	Power Button Spring
G16	QBC1231	Eject-Button Spring
G17	QBC1380	Select Button Spring
G18	XTN26+5B	Tapping Screw ⊕2.6×5
G19	XTN26+6B	Tapping Screw ⊕2.6×6
G20	QKMM0040K	Main Case
G21	QMLM0042	Eject Lever
G22	QYT0636	Input Level Control Knob-R
G23	QYT0637	Input Level Control Knob-L
G24	QGT1565	Output Level/Dolby NR Knob
G25	QGOM0078	Direction Button
G26	QGOM0079	Mode Select Button
G27	QGOM0080	Rec Mute Button
G28	QGSM0169	Main Name Plate
G29	QGKM0159 "Silver Type" QGKM0159K "Black Type"	Side Panel-R ″
G30	QGKM0160 "Silver Type" QGKM0160K "Black Type"	Side Panel-L ″
G31	QGCM0060	Bottom Cover
G32	QKA1082	Rubber Foot-B
G33	XTS3+10B	Screw ⊕3×10
G34	QYKM0011A "Silver Type" QYKM0011Y "Black Type"	Indication Plate Assembly ″
G35	QYFM0052S "Silver Type" QYFM0052K "Black Type"	Cassette Lid Assembly ″
G36	QGCM0057 "Silver Type" QGCM0057K "Black Type"	Case Cover ″
G37	XTB4+10BFN "Silver Type" XTB4+10BFZ "Black Type"	Tapping Screw ⊕4×10 ″
G38	QYPM0059 "Silver Type" QYPM0059K "Black Type"	Operation Panel Assembly ″
G39	XTN3+10B	Tapping Screw ⊕3×10
G40	XTN3+6B	Tapping Screw ⊕3×6
G41	XTN26+8B	Tapping Screw ⊕2.6×8
G42	XTS3+10B	Screw ⊕3×10
G43	QBH0184	Spacer
	ACCESSORIES	
A1	QFX0084	Connection Cord Assembly
A2	QQT3259	Instruction Book
	PACKINGS	
P1	QPNM0186	Inside Carton
P2	QPAM0048	Cushion-R
P3	QPAM0049	Cushion-L
P4	XZB50X65A02	Poly Bag (for UNIT)
P5	QPQ1052	Poly Sheet (for AC Cord)
P6	QPS0434	Pad

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ORDER NO. ARD- 8311035P

Parts Change Notice

(D)...For all European areas except United Kingdom.
(B)...For United Kingdom.

(N)...For Asia, Latin America, Middle East and Africa areas.

(A)...For Australia.
(P)...For U.S.A.
(C)...For Canada.

(F)...For Asian PX.
(J)...For European PX.

Model No.

RS-M258R

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein. If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change	*The circled item indicates the reason. If no marking, see the Notes in the bottom column.
1. Improve performance	
2. Change of material or dimension	
3. To meet approved specification	
4. Standardization	
5. Addition	
6. Deletion	
7. Correction	
8. Other	

Interchangeability Code			**The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.
	Parts	Set Production	
A	Original New	Early Late	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.
B	Original New	Early Late	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
C	Original New	Early Late	New parts only may be used in early or late production sets. Stock new parts.
D	Original New	Early Late	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
E	Other		

Part Number

Model No.	Ref. No.	Original Part No.	New Part No.	Notes (* - **)	Part Name & Descriptions
RS-M258R	VR301	EVNM4AA00B52	EVNM4AA00B13	1-C	Variable Resistor
"	D304	MN161	MV121	"	Diode
"	E3(D/B)	RHR993ZA	QTD1315	2-A	Wire Clamper
"	⚠ E47(N/F/J)	QJT1029	QJT1096	2-C	Nylon Coupler
"	G22	QYT0636	QYT0647	2-D	Input Level Control Knob-R
"	G23	QYT0637	QYT0648	"	Input Level Control Knob-L
"	A2(B)	QQT3259	QQT3312	7	Instruction Boook

NOTE:

- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety.
  When replacing any of these components, use only manufacturer's specified parts.

File this Parts Change Notice with your copy of the Service Manual.

Original Service Manual is Model No. RS-M258R(P/C) Order No. ARD82050145C1-19.
(D/B) Order No. ARD82030129C2-19.
(N/A/F/J) Order No. ARD82050148C7-05.

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